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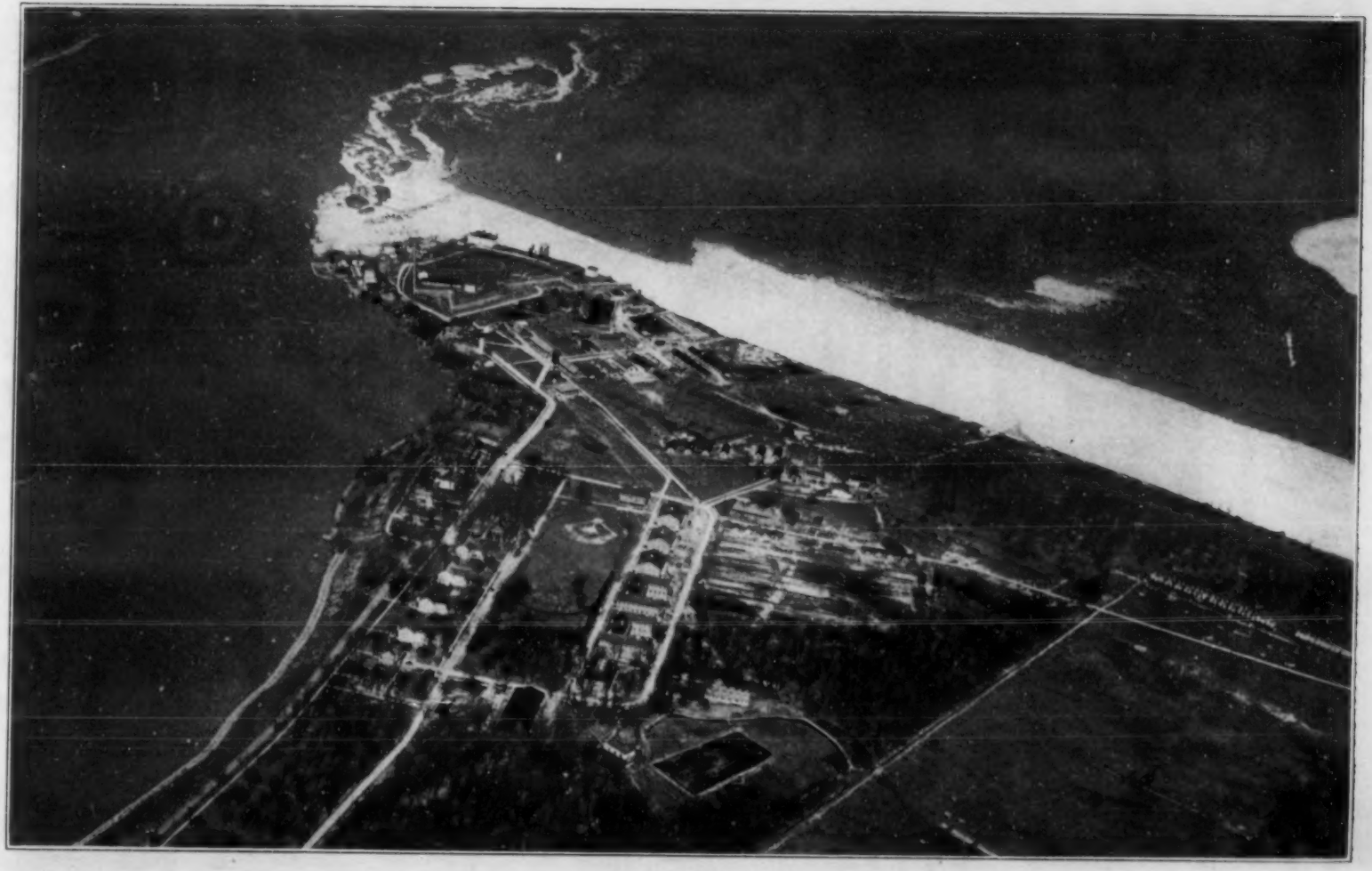


Fort Niagara, New York
A striking view of the station of the 28th Infantry (less 1st and 3rd Battalions)

INFANTRY JOURNAL

Vol. XXXVI JANUARY, 1930 No. 1

Antiaircraft Rifle Marksmanship

CAPT. SIDNEY H. NEGROTTO, 12th Infantry

THE importance of training ground troops to protect themselves against aerial attacks is vital. Tentative Training Regulations 300-5 emphasize the necessity of all infantry being trained to protect itself against such attacks with its own weapons, technique, and tactics, and without reliance on other arms or on special types of guns. In a recent letter to all infantry regimental commanders the Chief of Infantry reiterated the importance of this training. Correct training methods and doctrines are still in the stage of development, but sufficient progress has been made to insure to the Service teaching methods that will produce satisfactory results.

Infantry protection against aircraft is accomplished by (1) concealment, (2) dispersion, and (3) rifle and machine gun fire. It is with rifle fire against aircraft and the training of riflemen in this class of fire that this article is concerned.

In order to be practicable, antiaircraft rifle marksmanship must be extremely simple. Nothing that is complicated nor that requires more than a brief interval of time from the instant the target appears until fire is opened, and nothing that is difficult to teach average soldiers in a very short time, has any place in the infantry training schedule. There is no time for setting sights, adjusting slings, and getting into position. The firing is done from an off-hand or other convenient position rapidly assumed on the approach of the plane. The squad or section leader has only a short time to estimate the range to the target, and its speed, and to determine the amount of lead. This estimate, reduced to the form of a fire order, must be transmitted to the unit and fire opened immediately. The fire order should consist of only a few words, such as "Five leads, Commence firing." Fighting two or more planes that appear simultaneously complicates the problem somewhat, in that the distribution of the fire must be such that all planes are covered. But the essential principles of antiaircraft marksmanship are not effected.

Antiaircraft rifle marksmanship is divided into three main parts:

Part I—Preparatory training.

Part II—Firing at stationary and moving targets on a one thousand-inch range.

Part III—Firing at towed targets.

Since rifle marksmanship is a prerequisite to antiaircraft firing, it is assumed that the class is proficient in the principles of good shooting. There re-

Fort Niagara, New York
A striking view of the station of the 28th Infantry (less 1st and 3rd Battalions)

main only to be explained the theory of shooting at moving targets and practice in correctly placing the shot group in accordance with an announced lead.

But correct methods of training are important. Instruction must be progressive, explanations clear, and the prescribed form insisted upon, in order to obtain the best results. With the object of determining the simplest and most comprehensive methods of training, the writer conducted experiments in which several methods were used, including those prescribed in Tentative Training Regulations 300-5. These experiments demonstrated that the best results were obtainable by departing in some instances from the regulations. The methods thus evolved were used in a course in antiaircraft rifle marksmanship at Camp Perry, Ohio, last summer. More than five hundred officers of the Regular Army, the Marine Corps, the National Guard, and the Organized Reserves received this instruction, and, although criticism was invited and suggestions were called for, the essential features of the course were found to be sound. The methods used at Camp Perry were comprehensive, simple and easy to assimilate and have been recommended as changes to the Training Regulations.

THE ONE THOUSAND-INCH RANGE

The primary object of the thousand-inch range is to develop skill in antiaircraft marksmanship. The three types of moving targets prescribed in the training regulations, when properly operated, represent all of the maneuvers of a plane and are adequate for training purposes. There are other types of moving targets which would answer the same purpose, and hundreds of various types have been suggested, especially many variations of the swinging and vertical targets, but none offers any appreciable improvement over the ones prescribed. It must be borne in mind that this range is only a means to an end. The essential feature of antiaircraft marksmanship is to direct the aim of the rifle an appropriate distance in front of the moving target so that the projectile and the target will meet in mid-air. The one thousand-inch range is designed to teach this one basic thing, and to afford practice in this class of fire. It is important that the speed of the moving targets be accurately calibrated so that, with the lead used, the shot group will be centered in the black silhouette.

The specifications given in the training regulations for the thousand-inch range are complete. There is, however, room for the use of ingenuity in perfecting the mechanical features of the various structures, and if care is taken in the construction, little or no operating difficulties will be encountered. The three moving targets at Camp Perry operated continuously eight hours a day for four weeks without a single mishap and without any difficulty. A good company mechanic can build one of these ranges, and in most posts there is available enough salvage material for it. The one limitation at many small stations is the lack of sufficient area to take care of the waste fire. At such stations it is not necessary to build the swinging or vertical targets. The parallel moving target and the stationary targets with backstop are sufficient to teach the essentials of antiaircraft marksmanship.

The proper arrangement of the targets on the range is important in order

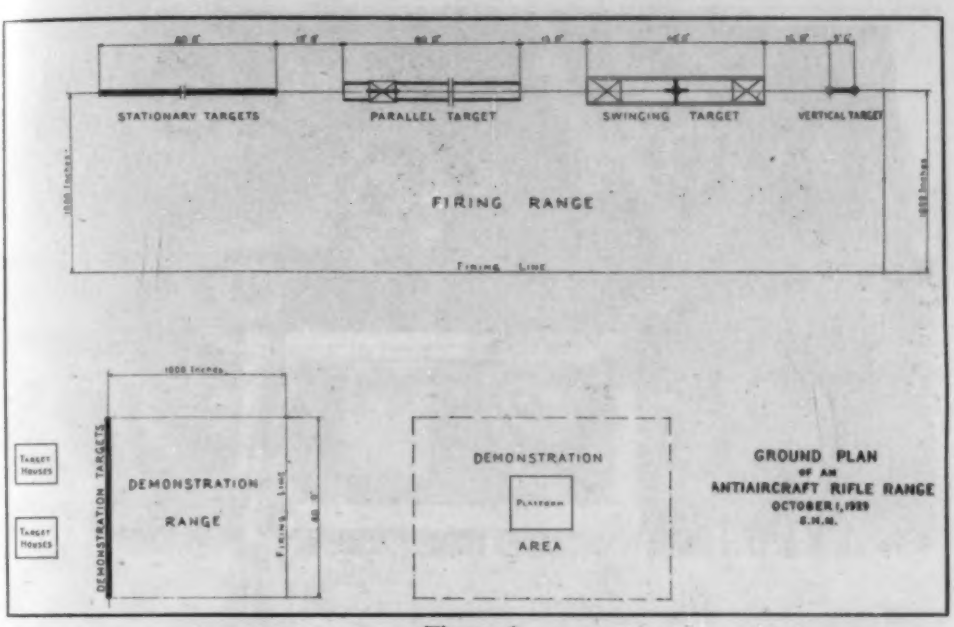


Figure 1

to facilitate control of the class. Figure 1 is a plan of the Camp Perry range. This range will accommodate a class of one hundred and fifty men. With the class properly organized and efficiently handled, one hundred and fifty men can fire the course suggested herein, in from eight to ten hours. The time to fire and score an order of two men on each of the various targets was found to be six minutes for five shots on the parallel target, five minutes for five shots on the swinging target, five minutes for five shots on the vertical target, and sixty minutes for sixty shots on the stationary targets.

PREPARATORY TRAINING

The preparatory training begins with a lecture on the tacical and flight characteristics of various types of aircraft, an explanation of the theory of shooting at rapidly moving targets, the method of calculating leads, the nature of rifle fire dispersion, and a demonstration of the proper method of leading a moving target. This is followed by practical work that consists principally of aiming exercises on the demonstration targets.

It is important that the class understand thoroughly the correct method of leading a moving target. This is best understood by reference to the diagram shown in Figure 3. The aim is initially directed on the rear end of the silhouette and then shifted along the path of flight, through the silhouette and to a point the required amount of lead in front of the silhouette. As the aim is shifted through the silhouette a mental note is made of its length. Since the lead is expressed in target lengths, the mental note thus made is used as a unit of measure and applied in front of the silhouette the required number of times. This process is gone through for each shot fired. It is important that this be impressed

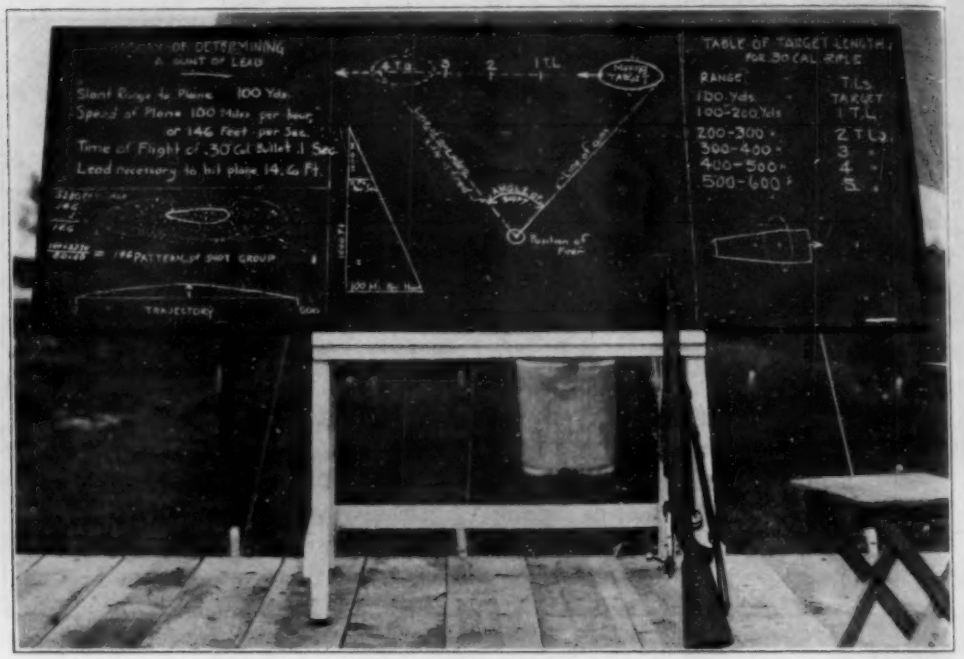


Figure 2—A Demonstration Platform and Blackboard

on the student, as the natural tendency is to select an imaginary point as estimated distance in front of the target, and fire. The writer has experimented with both methods and found the "follow through" method for each shot to be superior.

The mathematical calculation for determining the theoretical lead is a very simple one and the class should know how this is done. Let us take a concrete example:

A 30-foot plane traveling 100 miles per hour at a slant range of 200 yards requires a lead of one target length. This lead is determined as follows:

100 miles per hour is equivalent to 146 feet per second.

Time of flight of .30 caliber bullet is .2 seconds (see table on page 34, Technical Regulations 1350-A).

.2 x 146 = 29.2 feet the amount of lead necessary to hit the target; or, expressed in the more convenient unit of measure, this is equivalent to one target length lead.

By this process a table of leads for different ranges and plane speeds can be constructed.

Due to errors in judgment some men will under-estimate while others will over-estimate the amount of the announced lead. Then there is an appreciable amount of time lost between the instant the mental decision to fire the

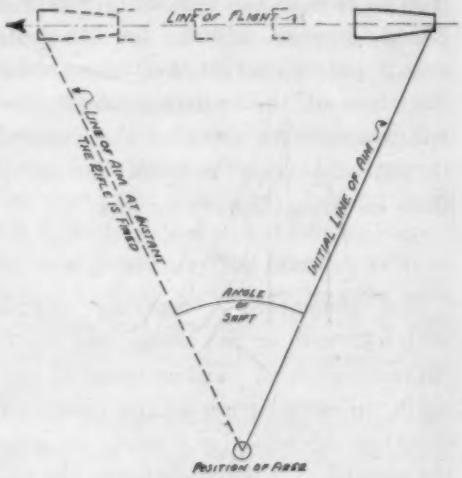


Figure 3

piece is made and the exact moment the trigger is squeezed. This loss is caused by the time it takes the muscles to react to the mental decision, and it varies with different individuals. The time thus lost will vary from one-tenth to one-half [1] of a second. This elapsed time is an important factor in firing at a rapidly moving plane, and if not taken into account it will cause the cone of fire to pass in rear of the target. For this reason the writer believes that the correct lead to use is one that is at least one target length greater than the theoretical lead.[2]

The object of the aiming exercises is to develop the individual's judgment in estimating leads. The method given in the training regulation is believed to be faulty. Instead of a rifle being placed in a rifle rest for making triangles as prescribed in paragraph 30, the pupil should be required to take the modified kneeling position with the rifle in the off-hand firing position. The sights are aligned on the center of the rear end of the movable silhouette held by the coach. The pupil then quickly moves the rifle (sights aligned) through the silhouette and beyond its front end the required number of leads. He holds this aim and directs the coach to "move" the silhouette. The coach moves the silhouette forward, steadily, along the pencil line on the target and when the front edge of the silhouette is on the line of aim the pupil directs the coach to "hold." The silhouette is then moved up or down as the pupil directs and when properly aligned the

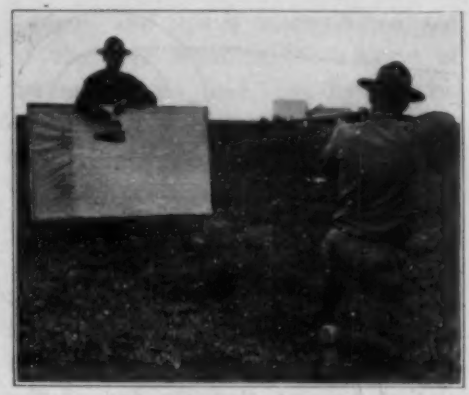


Figure 4—The Method of Making Triangles Used at Camp Perry

coach is told to "mark." The rifle is then brought down from the firing position. This operation is repeated twice. The three points are connected with lines forming a triangle. The pupil goes forward, examines the results and plots the triangle in the proper place on his score card. This method, after trying several others, was found to be far superior to the one prescribed. In this method, the pupil, as well as acquiring facility in assuming the required position, made smaller triangles, judged the lead more accurately and seemed to grasp the significance of the instruction more readily.

Triangles should be made with leads of one, two, and three target lengths on each of the three demonstration targets. When the pupil attains proficiency in estimating these leads he begins firing on the stationary targets.

RANGE FIRING

The range firing consists of firing at stationary targets and moving targets. The object of the stationary targets is

[1] Results of observations made by the author.

[2] Compare the hits made at the same ranges with the two different leads used, as given in table on page 228, INFANTRY JOURNAL, September, 1929.

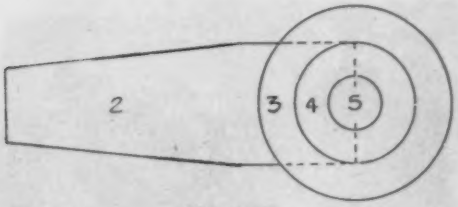
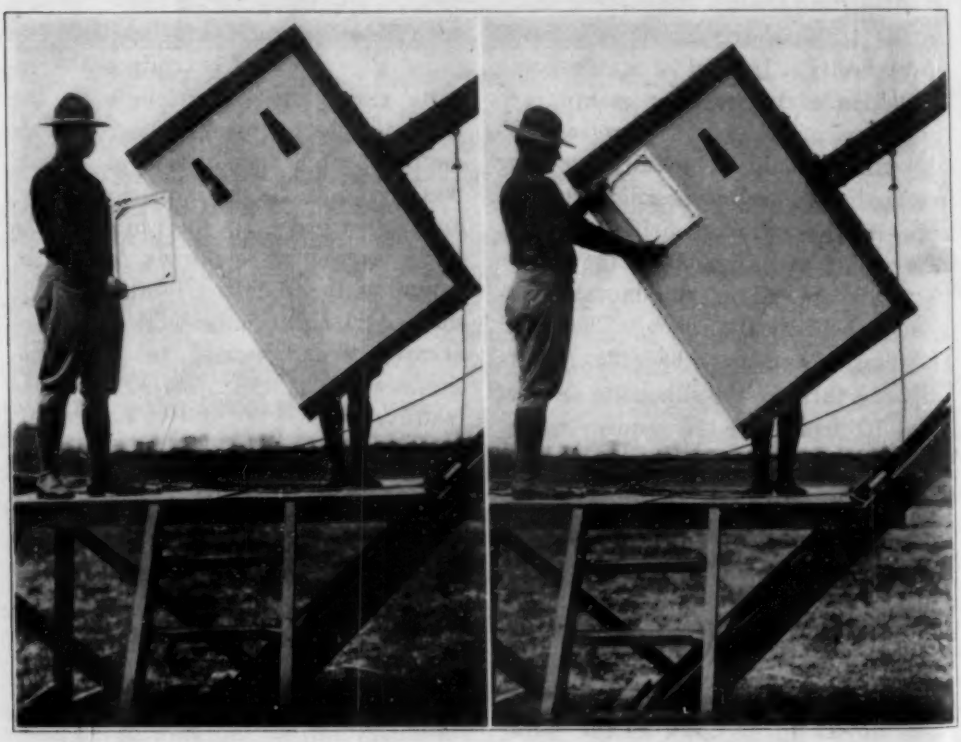


Figure 5

to record the accuracy of the firer in rapidly estimating and firing at an announced lead. This should be carried out as prescribed in the Training Regulations, except that the use of the scoring diagram shown in Figure 5 is recommended.

Since the object of this firing is to center the shot group at the point of aim, namely, the target, one target length lead, two target lengths, etc., it is only reasonable that the score be determined by giving the maximum value to hits in the area centered about the point of aim. For instance, if the fire is directed at the silhouette, the center of the front edge of the silhouette should be the point of aim; likewise, if the announced lead is one target length, the maximum value should be given the hits which are in the area exactly one target length from the silhouette, and so on. This is obvious because in these exercises we are trying to develop skill in estimating leads accurately, and not to center the shot group in that part of the sil-



The Target Reading the Score

Figure 6—A Simplified Method of Scoring

The small frame holds a scoring diagram made on transparent paper. The marker superimposes this on the black silhouette to read the score. He posts the target after each man fires.

houette which corresponds to the vital part of a plane.

The moving targets are designed to represent in reduced scale the various maneuvers of a plane. For instance, a plane in parallel flight traveling one hundred miles per hour at a slant range of one thousand feet would have an apparent speed at one thousand inches of eleven feet per second. On this basis the size of the silhouette and the speed of the parallel and of the swinging targets are determined.

The object of the firing at the moving targets is to develop skill in centering the shot group at the point of the announced lead. In this firing we are trying to get the maximum number of hits in that part of the silhouette which corresponds to the vital part of a plane, and this is accomplished, not by the firer reducing the amount of the announced lead, but by the increased dispersion incident of this class of fire. The thoroughness of the preliminary training will be reflected in the results on the moving targets.

No group firing should be undertaken until every man has made a satisfactory score on each of the three moving targets.

A simple and very satisfactory course in individual firing and one that is recommended is shown on the Individual Score Card, illustrated herewith and easily reproduced on the mimeograph.

SCORD CARD

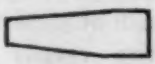
(Individual)

_____, 192

Name _____

Rank and Organization _____
(If civilian give address)

AIMING EXERCISES

TARGET	1TL Lead	2TL Leads	3TL Leads	COACH
PARALLEL 				
OBLIQUE				
VERTICAL				

_____

Signature of Officer)

STATIONARY TARGETS

Class of Fire	*At Target 5 shots 30 seconds*	*1 TL Lead 5 shots 30 seconds*	*2 TL Leads 5 shots 30 seconds*	*3 TL Leads 5 shots 30 seconds*	*Total Score*	*Scorer*
Parallel						
Oblique						
Vertical						

TOTAL SCORE _____

_____
(Signature of Officer)

MOVING TARGETS

Class of Fire	*Score*	*Scorer*
Parallel—5 shots (1 shot per swing)		
Swinging—5 shots (1 shot per swing)		
Vertical—5 shots (1 shot per swing)		

_____
(Signature of Officer)

TOTAL SCORE _____

AGGREGATE SCORE _____

FINAL RATING _____

_____
Captain, Infantry
Director

Stencil No. 53.

The firing on the moving targets should be repeated as often as the ammunition allowance permits. There is no need of repeating the firing at the stationary targets, for if an individual is deficient in this he should be sent back to repeat the aiming exercises. Also, group firing on the stationary target is not recommended. The ammunition for this can better be used in practice on the moving targets.

FIRING AT TOWED TARGETS

Firing at towed targets involves two factors of vital importance, namely:

1. Accuracy in determining proper leads;

2. Skill in centering the shot group at the point of the announced lead.

The determination of leads is primarily a task for officers and noncommissioned officers. Due to the imperfect methods in use and the rapidity with which the estimates are made, the results are subject to large errors. A twenty percent or larger error in either one or both of these factors will produce negative results unless by chance the error of one will compensate for the other.

Since the lead is determined from the estimated range to the plane, and its speed, judgment in this can be developed by observing friendly planes. As to the speed of the plane it is sufficient for all practical purposes to be able to judge whether the plane is traveling at less or more than one hun-

dred miles per hour; and, if at more than one hundred miles per hour, whether the speed is greater or less than one hundred and fifty miles per hour, since lead tables for the various ranges will be calculated on the bases of one hundred and one hundred and fifty miles per hour only.

As often as possible, estimated ranges to planes should be compared with the actual ranges. Excellent training in this for officers and noncommissioned officers, when a plane is available, is to establish a ground base-line one hundred or more yards long, with an observer at each end of this line. The observers measure accurately the range to the plane for various positions, while the class makes individual estimates. The estimated ranges in each instance are compared with the observed ranges. A simple, but less accurate, method is to have one observer to measure the range by means of the mil scale in the field glass, while the class makes individual estimates.

The errors in the amount of lead taken by any individual in the execution of a fire order will vary with the amount of training, and also according to the number of leads required in the fire order. The greater the number of leads, the greater the error.

The writer does not believe that the training on the one thousand-inch range is sufficient to develop individual skill in estimating leads on sleeve targets. The difference between the two classes of fire is too great. There is a gap here in the training sequence that must be filled. He has found that a device such as the AA Aim Recording Table [3] for exercises in "dry" shooting at a sleeve target suspended from a flag-staff is an excellent means of filling the gap. This or some such method should be used before any firing is done at towed targets.

In conclusion the writer would like to repeat that the two most important factors of antiaircraft rifle marksmanship are accuracy in determining leads and skill in placing the shot group on the point of the announced lead. As to these, the present Training Regulations are either silent or inadequate.

[3] See page 231, INFANTRY JOURNAL for September, 1929.

The Future of Infantry

CAPT. CHARLES L. BOLTÉ, Infantry

V[1]

INFANTRY TACTICS

TACTICAL methods are constantly changing. Just as the means of combat, the weapons and equipment of the soldier, change, so does the manner change in which the individual and groups of individuals employ their weapons. The massed foot-soldiery of the days of the Greek phalanx and the Roman legion well served the requirements of their time. The pikemen and the musketeers of Gustavus Adolphus, fighting with quite different weapons and under different conditions, adopted markedly different tactics successfully. The firing lines of Frederick the Great and of Napoleon were compact linear formations, of sufficient depth to provide the necessary volume and continuity of fire by the rotation of the several ranks. But these more or less geometric, mechanical formations, composed of individual automata, broke down before the bushwhacking tactics of the American Indian. Braddock's defeat was not caused by lack of courage, of quality of troops, of thoroughness of training, but by the fact that the British tactics were suited to the European battlefield and wholly unsuited to the type of combat with which they were faced on the banks of the Monongahela. The sort of open warfare which troops in contact with the Indians experienced from the very beginning had a marked effect upon the character of European tactics. It is not too much to say that the use of the screen of skirmishers was a development brought about partly by the experiences of French and British troops on the American continent. True, the steady improvement in firearms, whereby the range, accuracy, and rapidity of fire were increased, made possible a gradual reduction in the depth of the firing line from several ranks to three and then two. The climax of this development came in the skirmish line with a depth of one man, the individuals lying practically shoulder to shoulder in order that the maximum volume of fire might be obtained.

Our 9th Infantry at Tientsin deployed in a single regimental skirmish line, and the troops which assaulted Kettle and San Juan Hills about the same. All of our combat training was then directed toward the tactical conception of a single skirmish line as the source of infantry fire. We went into the World War with this idea. That it suited the conditions that obtained on the battlefields before that war, and the means with which the Infantry was armed, is established by history. That it was not altogether suited to the combat conditions of the World War we learned from our Allies and from bitter experience. It is clear that our infantry tactics is still changing and will continue to change.

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[1] This is the last article of Captain Bolté's important and excellent series. For the earlier articles see INFANTRY JOURNAL for September, October, November, and December, 1929.

It is essential to the continued progress of our infantry development that we study the past and current changes in infantry tactics and that we reach logical predictions as to future changes. The evolution of infantry tactics takes place according to the proven law of survival of the fittest. The army that adheres to outworn means and methods goes down to inevitable defeat before modern forces with up-to-date scientific methods and equipment. We have seen what efforts our Army is making to keep abreast of the developments in organization, equipment, and training. Our tactical doctrines and methods are likewise also subject to constant scrutiny and test with a view to their modification and development to meet the requirements and possibilities of future combat. At the Infantry School such agencies as the Infantry Board and the Academic Department exercise the function of examining current practices and teachings in the tactical employment of infantry in order that we may take timely steps to keep abreast of the sound developments in current military thought and infantry tactics.

The task is by no means an easy one; the road ahead is more often only vaguely outlined than clearly defined. The so-called fog of war has its counterpart in the peace-time efforts to modernize infantry tactics. Attempts to pierce the fog and predict with reasonable conviction the lines along which our tactical thought and training should proceed are not always, or even often, productive of satisfactory doctrines unanimously agreed to. There is always the ultra-conservative, to whom any proposal to alter established and proven tactical methods is abhorrent, regardless of the changes which have taken place in arms and equipment which have plainly made those methods obsolescent. He is the man who is preparing for the World War ten years after the Armistice. Then there is the extreme radical, who favors immediate and wholesale scrapping of the entire system of our military thought on the shaky basis that a new weapon has been found that will completely and violently revolutionize warfare. Fortunately these two types are not so numerous as to control or even to affect seriously the trend of our thought. It may even be that their existence is a good thing for us, since the former by his backwardness spurs us to forward movement and the latter by his blatant claims irritates us into progressive contradition. It is satisfying to feel, as the trend of thought at Fort Benning and elsewhere within the Infantry justifies, that the great majority hold to the middle course of reasonable and logical development along sound lines. The chief difficulty lies in determining what those lines shall be and how we shall follow them.

The basic doctrine that infantry fights by fire and movement properly exercises an undiminished control over the tactical conceptions according to which we are training and will apparently continue to train. The application of that doctrine, however, is being modified and altered by the changes which are taking place in the combat means available to the infantry. Twenty or thirty years ago, when the individual small arm provided practically the only fire from infantry sources, under cover of which the maneuvering elements could move or advance, the fire of one platoon or of a few squads was directed so as to

gain the superiority necessary to the movement of another platoon or another squad. This process was continued, the units alternating as sources of covering fire and as moving elements, until the enemy broke or until the entire firing line had closed to assaulting distance. The basic principles according to which this sort of procedure took place were not then new, nor have they since been abandoned. It has always been necessary to fix, immobilize, or pin down an enemy before being able to strike the crushingly decisive blow that would defeat him. But the obscurity and indefiniteness of the target in modern infantry combat have rendered ineffectual and uneconomical our pre-war musketry method. Now the introduction and development of the machine gun, and of other such weapons within the infantry, have provided a source of fire which can perform more efficiently the fixing process, releasing from the task of providing their own covering fire the maneuvering elements which are to strike the assault. We have introduced, or rather developed, a pivot-of-fire agency which we can use in the fixing process more effectively than we could a considerable portion of the homogeneous unit that did not have the distinctive source of fire.

This general condition holds true not only for the smaller infantry units, but also for units that contain mechanized elements and for infantry in combination with other arms. Since the invention of artillery, for example, the action of the infantry has been largely influenced by the fires that could be brought to bear to fix or demoralize the enemy and to help in securing the necessary fire superiority without which the chances for decision were greatly jeopardized. Mesa's guns were habitually the base for Cortez' harquebusiers; Napoleon's paid tributes to his artillery; the French affection for the *soixante-quinze* spread to our own ranks in 1917. These weapons have provided much of the comforting fire support without which the infantryman moves only at great cost.

Until the development, however, of team-served weapons which could be placed within the forward combat areas, the smaller maneuvering elements had, within the infantry, to rely upon a large part of their own potential fire to cover the movement of a small part of their number. The resulting process was slow and uneconomical because of the large number of sources of fire that had to be kept in action in order to secure the necessary fire-power. This was unavoidable, however, on account of the weapons at the time available. The introduction of the automatic or rapid-fire weapon has changed this, and the result has been a sharper line of demarcation, within the infantry, between the source of covering fire and the maneuvering element. The fire and movement elements, both still fundamental in our infantry tactics, have become distinctly dissimilar in character and capabilities. The effect upon the tactics has been appreciable, and is manifested by the need for machine gun knowledge on the part of all infantrymen and by the reduction of the range limits of the small-arms fire fight. There is a decided belief on the part of thinking infantrymen that the individual weapon will, in general, enter into the fire fight at much shorter ranges than heretofore. In plain words, the use of numbers of rifles at ranges longer than a very few hundred

yards will be exceptional. This was true, for that matter, in the past war. What this indicates with regard to the range of the rifle and to the scope of marksmanship, musketry, and combat practice training is clear.

The development of weapons which can deliver a greater volume of accurate fire from a smaller number of sources, the introduction of such factors as the fire of massed artillery, gas, aerial bombs, and the speed with which modern battlefield movement can take place, have permitted and at the same time have forced a greater dispersion of combat elements in the contact zone. We can no longer safely group troops in masses or use them in concentrated formations within the zone of hostile ground fires, or, for that matter, wherever there is possibility of attack from the air. The tendency to dispersion which has characterized the tactics of infantry throughout past history grew more rapidly marked during the World War and promises to become stronger still. The density of men per unit of area in the extreme forward areas and throughout the increased depth of the battle zone is becoming less and less. With regard to the human element, at least, there is considerable significance in the newly coined phrase "the emptiness of the modern battlefield." This decreased density is not alone a characteristic of the smaller infantry units; the increased range of weapons and the speeds with which fighting elements can now move have greatly increased the dimensions of the battle zone. Thus, although the numbers of troops and guns may be tremendous, as they were in the last war, their radius of effective action is so great as to cause a decrease in density when those numbers are compared with the scope of their activity.

The increased dispersion of men has had a marked effect upon the tactics of infantry. The day in which there can be almost physical contact between all the individual members of large units is long past. Time was when companies, battalions, and even regiments and brigades, could be directed in battle by the voice of a single leader, or by visual signals and bugle calls. Now it is more frequently the case that platoons and smaller units are spread beyond the direct control of their leaders. The increased difficulties of control are at once apparent. The abandonment of compact linear formations and the adoption of group fighting dictated and made possible by the conditions of modern warfare have thrown upon the individual greater responsibility, have obliged him to exercise more initiative, and have permitted him more independence and freedom of action. The American Army took steps to capitalize this fact in the World War, in the firm belief that love of responsibility, initiative, and independence are characteristic of the American. The doctrine of appropriately distributed responsibility has never been repugnant to our military teaching. We have always taught that the subordinate should be allowed and encouraged to command his unit. We have always stressed—in theory at least, however we tend toward the violation in practice—the desirability of leaving to the subordinate the decision as to how a task shall be performed, once the nature of that task has been determined. It is more noteworthy now that often the decision as to what the task shall be will devolve upon that same subordinate. The sergeant or the

corporal who of his own accord appreciates that a particularly irritating machine gun must be removed, and thereupon acts for the general advancement of the company of which he is a part, fulfills admirably the difficult requirements of the forced decentralization.

Group fighting is the theme of present-day infantry tactics. We did not enter the World War with the ability so to fight. Adhering excusably to the linear tactics which had rightly characterized our previous battles and our pre-war training, we struggled, at first quite unsuccessfully, to grasp the lessons which our Allies had learned and which the hostile fires proceeded then to teach us. Depth in infantry formations was prescribed, but who, for example, does not recall the frequency and rapidity with which platoon and company supports merged with assault elements into a single skirmish line? It was not until the spring of 1918 that the doctrine of infiltration, so-called, took definite form in our minds, guided by the tactics which the Germans were then practicing. This doctrine, in all its soundness, has become a basic part of our conception of the tactics of modern infantry. No longer do we dispose ourselves, either in attack or defense, in continuous lines. Traversing the front of a unit in battle, from flank to flank, we find scattered groups, and only groups, with the greater part of the front consisting of gaps controlled by the fire or potential fire of the groups themselves.

The doctrine of infiltration will find increasing application as the fire-power of the individual and of the small group increases, as the maneuverability and the rapidity of movement increase through the employment of mechanized elements. Gaps or intervals between cooperating units must, to accord with the basic principles of tactics, fall within the limits of supporting distance. This distance, however, is not measured in yards alone. The essential thing is that either of two units be able to render assistance to the other before the latter can be overwhelmed. There are involved, therefore, the length of time during which the unit to be aided can hold out, the speed with which the assisting unit can move, and the range of the weapons with which the assisting unit is armed. It is plain that the longer the first can hold out, or the more rapidly the second can move, and the greater the range of the weapons is, the greater will be the distance permissible between the two units. Thus have supporting distances, measured in yards or miles, increased in modern battle, and thus has the doctrine of infiltration been made more universally applicable.

It is impossible to consider the trend of infantry tactics without giving attention to the problems which the development of motorized and mechanized elements has presented. We may define, for the present, motorized elements as those in which the primary characteristic is transportation, in which the fighting agencies are separable from the transporting agencies. Into this category fall passenger trucks, cargo carriers, and reconnaissance cars. Likewise, we may define mechanized elements as those in which the fighting, transporting, and protecting agencies are more or less inseparably combined. Into this group fall the tanks, tractor-mounted guns, and armored cars.

It is not difficult for us to visualize some of the effects which the increased adoption of vehicles for carrying men and supplies into the combat area or from one part thereof to another will have upon the tactics of infantry. Scope of activity increases; radius of action lengthens; fatigue to troops becomes less; movements speed up; the amounts or weights of supplies deliverable increase. There will result an increasing tendency toward the dispersion into groups which we have discussed above.

It is, however, with the effect of the mechanized agency on the tactics of infantry that we are largely concerned at the present time. We have seen that the speed and efficiency of the tank have increased greatly over what they were during the World War. The disparity between the speeds of the tank and of the man on foot has become so marked that we must answer the questions of whether and how these two different speeds can be reconciled.

During the World War the practice was to employ tanks in close conjunction with advancing foot-troops. The speeds were roughly the same, and the difficulties of cooperation were insignificant compared with those which now confront us unless we can develop new and sound tactical methods which will conform to the changed conditions. The developments which have taken place in antitank defensive measures have pointed to the probability that any attempt to restrict the tank speed to the slower rate of movement of the foot-soldier will in the future result in loss of the tank. The speed of the foot-soldier cannot increase as long as he remains on foot. Can he be transported in battle in a vehicle with a speed comparable to that of the tank, and if so, how can he fight from that vehicle?

At The Infantry School a considerable amount of thought has been devoted to the combat relationship between the foot-soldier and the mechanized agency, and various beliefs have come to the fore. Some advocate a complete tactical separation of two dissimilar fighting means, the tanks being used solely as a mass of maneuver, a spearhead of an attack, or an encircling force, with which to strike the decisive blow. Others favor a distribution of tanks, part being used in a mass and part being used in close liaison with the foot-troops. Still others adhere to a method whereby rather widely separated groups of foot-troops shall operate between and behind groupings of tanks to exploit the successes and occupy the ground that the latter overrun. Whether any of these, or still another method, or a compromise between two or more plans will prove to be the most workable and satisfactory is still a question the answer to which we shall find only after much further study and test.

It must be apparent to all that the difficulties of control and liaison will increase in number and complexity, and that since the success of the tactical plan depends largely upon the ability of the leader to exercise control and of the elements to cooperate with each other, we must find solutions to the problems in intercommunication between tanks and tanks, foot troops and tanks, and groups of foot troops more widely separated than heretofore. It is not to be thought that these problems and the others presented by the demands in infantry tactical development cannot be solved. But it is clear

that solutions will not be forthcoming unless the Infantry makes positive effort to study the problems, devise and test tentative solutions, and in general treat the entire question as of vital concern to the future success of, and in fact to the very existence of, the infantry.

It is possible to summarize somewhat the trend of infantry tactical development in a few phrases. The methods of combat use of infantry are changing and will in the near future change still more. Open warfare in the sense of vague, rapidly developing situations, with troops dispersed into comparatively small, highly mobile groups, will prevail. Infiltration methods for both small and large forces will mark the attack, and opposing these will be small highly organized, but nevertheless mobile, group defenses. Linear formations of all sorts will disappear—should have disappeared by now, for that matter. Fire and movement, with the essential shock to gain the decision, will be no less fundamental than they have ever been, but the squad rush, the forward rush of unprotected bodies in the face of tremendous volumes of automatic fire, will be a thing of the past. Upon the subordinate will devolve responsibility and the need for initiative to a greater degree than ever.

Where, in the play and counterplay of opinion, prophecy, and conjecture, can the infantry student find sound guides for his thought and study? Only by keeping his figurative feet on the ground, and while appreciating and keeping pace with the progress going on around him, by avoiding ultra-conservative and ultra-radical contentions and keeping to the middle ground of sound progressive reasoning. But his study and action must be positive.

The possibility of war has not yet been eliminated from the scheme of human society. Without this fact as a basis there would be no object in devoting one's time and effort to the study of tactics. It needs only appreciation of the fact that war will come to us again, and a consideration of the tremendous cost which ignorance has imposed upon us in past wars, to demonstrate the necessity for study, preparation, and training on the part of those who would lead our forces in future battles.

After every great struggle on the battlefields of history mankind has experienced a reaction, the keynote of which has been a renunciation of war. Sometimes this reaction has been prompted by the exhaustion from protracted and costly campaigns, sometimes by a psychological revulsion among the combatants, sometimes it has been dictated by the commanding position won by the victor. Then peace has reigned for a generation or so, only to be shattered by a war more far-reaching in its effects, more bitter in its conduct, and more righteous in the eyes of either side than any previous war.

Mankind lives by hope, and the hope that war, with all its cost in blood and treasure, with all its desolation, may be abolished definitely, irrevocably, once and for all, is essential to the continued happiness of humanity. But in the eyes of many it is as yet only a hope, one to be fostered and cherished and furthered, but still no more than a hope that does not at present justify the abandonment of military thought and training. There are those who be-

ported in battle in a vehicle with a ment cannot be solved. But it is clear

lieve that a millennium has been reached and that nevermore will war intervene to disturb the steady progress of civilization. On the other side are those who take the stand that war is so inherent in human nature that even the hope for its abandonment is futile and fantastic. On the middle ground are those who think that while the abolition of war is inevitably sure, present generations and generations for some time to come must prepare themselves to meet the crucial tests of battle in the event that war should occur before that abolition has become an established and immovable fact.

He who denies that ignorance on the battlefield is paid for in lives and in defeat is either himself woefully ignorant or else blind to the lessons which wars have ever taught. What wartime leader is there who has not reproached himself—most often undeservedly—for the errors which he made through military ignorance? Through no fault of their own, hundreds of leaders of platoons, companies, and higher units have lacked the knowledge and training which would have enabled them to make correct decisions in the crises that confronted them in battle. They had to gain that knowledge and training—if they lived—only by bitter experience under fire, and often at the cost of the lives of the unprepared and untrained men whose pitifully blundering leaders they were.

Modern Maxims

Capt. M. B. Driscoll, O. R. C.

From the Notebook of "General Experience"

When nations forsake war, enemies forsake peace.

If Aristides and Themistocles had talked longer, they would have lost their subjects.

When Spain trusted steel, it flourished; when it trusted gold, it died.

We know that submarines must be able to submerge, but we have forgotten that they must be able to emerge.

Indemnities are like fat men—they never go out of date, they just get larger.

Eschines made Demosthenes tired, but the Macedon put them both to sleep.

A man who has his hands on a rifle is not free to kick the pillars from under the state.

contentions and keeping to the middle ground of sound progressive reasoning. and training. There are those who be-

Rig for Diving

CAPT. BEN H. CHASTAINE, 57th Infantry (P. S.)

"RIG for diving!"

This command, shouted just outside the stateroom door, rose above the noise of the engines and the electric fans. It roused me to tumble sleepily from the bunk where I had been catching up with a few lost hours caused by an early departure from Jolo.

Sliding into breeches and shoes, and, of course, the things that go under them, I decided against shirt and leggings (and collar ornaments), because we were down in the Sulu Sea and it is hot down there. Also we were in a submarine. And that doesn't make it any cooler. If you will look up the location you will see that it is only about six degrees from the equator.

Thus equipped for diving I stepped out into the control room and waited for the captain and his officers to come below from the bridge. And then we went down.

But to get back to the beginning of this, we were fifteen army officers aboard the tender and submarines of the Seventeenth Submarine Division, United States Navy. Of these fifteen, two were major medicos, one was a captain of Cavalry, one was a lieutenant of Engineers, and the rest were captains and lieutenants of Infantry, all stationed at Fort William McKinley, the city of Manila, and Camp Stotsenberg.

We were aboard by invitation of Commander R. S. Culp, commanding the Submarine Division Asiatic, and his officers. The cruise was through the southern islands of the Philippine archipelago, and the naval officers had generously offered their quarters aboard the Canopus, the submarine tender, for the use of the army. This was possible through the fact that submarine officers have to leave their tender quarters vacant while cruising and live aboard their undersea craft.

With a feeling of deep obligation to the Navy we went aboard the Canopus from the dock of the Army and Navy Club at night. However, we did not all go aboard at the same time and actually did not get acquainted with one another until after breakfast the next morning. A few of us who boarded the tender in the early part of the evening were shown over a part of the ship and attended the "movie" which is a part of the daily recreation aboard a warship in good weather. They depend upon the weather because they are shown outside.

After the "movies" we began to get together. The army officers were shown to their various staterooms and a little later most of us gathered informally in the officers' mess. There we met practically all the officers of the seven submarines, for it is in the mess that they gather just before "shoving off" at night. On a submarine it seems one must have coffee "before (and after) taking," and in between times too.

Before this time the naval officer who was my personal host had shown me my bunk, oriented me as to my way about ship, and introduced to me the Filipino boy who was to look after my

The Army Officers on the Deck of the "Canopus"

things and my quarters during the voyage. I found that I could have a shower as often as I should like, that reveille meant nothing to me, and that, if I did not sleep most of the morning, I could get breakfast merely by presenting myself in the usual everyday army uniform and a clean face. Luncheon could be had on the same plan. For dinner whites would be worn.

We also learned that we could pay our official respects "topside" the following morning. The executive officer of the ship told us that the commander of the submarine divisions would be ready to receive us sometime after breakfast. It seems that "topside" is up. And up where the commanders of the divisions and the tender have their habitations you just don't go unless you are invited, or have official business.

With this knowledge stowed away we settled it with coffee and then gathered on deck amidships to watch the departure of the "pigs," or submarines. When we looked over the side and saw them, their nickname could readily be understood. The Canopus was anchored just inside the breakwater and the subs were tied up along the port side looking for all the world like a litter of pigs resting by the side of their mother. In the heat of the tropical night their crews were to be seen sleeping here and there along the narrow decks, taking advantage of what rest and cool air they could get. Below in a submarine at anchor in the tropics is no place to try to keep cool.

General activity was in evidence as soon as the officers passed across the gangplank from the tender to the nearest sub. Men who had been sleeping became awake. Some went below and others took their stations on deck and on the bridge. Terse commands were heard here and there, and after awhile a deep-throated whistle announced that the "pig" farthest away from the tender was "shoving off." One at a time, under power of their electric motors, they slipped away. It was done quickly and without noise. They were gone almost before we could realize

that seven ships had sailed. And then the tender herself hoisted anchor and began a more slow and stately passage through the opening in the breakwater, the wall of which had been kept brilliantly illuminated through the entire time by the play of her searchlights. At one o'clock in the morning we were on our way to the southern islands. I went to sleep with a cool breeze playing on me, not knowing or caring when we passed Corregidor.

The next morning we assembled under the direction of the senior line officer and went up "topside" to call on the commanders of the Asiatic Divisions and the 17th Division. They told us of the plans for the trip, where we would go, about the length of time we might expect to stay at each place, and what was more important, advised us that we might ride in the submarines. We were told that the best time for this would be during the trip from Jolo to Zamboanga. They also explained the maneuver that was to take place against the balance of the Asiatic fleet, and that this would mark the close of the trip from the southern islands back to Manila. They bade us be comfortable aboard the Canopus, inquired as to the comfort of our accommodations, and generally made us feel very much at home.

By this time we were off the west coast of Luzon in the China Sea and the balance of the day was spent in steaming steadily southward past the straits and the tropical islands on either side. That is, some of us saw the islands and some of us played bridge.

After two days we were down in the Sulu Sea and dropped anchor at night off the shores of Mindanao to await the daylight rather than sail the remaining distance to Jolo through the shoals that dot the passage among the islands in that part of the archipelago. Also this avoided the necessity of anchoring at Jolo in the night.

The green hills and red roofs of Jolo greeted us the next morning, as did a large, self-appointed delegation of diving girls who rowed out to the anchored ship in their *vintas* and plunged into the waters of the harbor for coins tossed to them over the side of the tender. It was as good as a circus to see them. They would dive from any position and to any depth for a coin and as far as we could see they never once failed to get the money. After awhile their little boats with their bamboo outriders appeared to have their bottoms almost covered with copper pieces of money. Some of the divers were boys, but none of these appeared to be able to boast an advantage in diving on account of masculinity. In the keen competition for coins all chattered and laughed and splashed about as much to their own amusement as to that of the spectators on the decks of the ship and the subs. In the general scrambling about one of the *vintas* broke from its bamboo outriders, capsized, and filled with water. This was the occasion for a demonstration in expert bailing. While they chattered and swam about in the water at a great rate they methodically grasped the boat fore and aft and began to move it suddenly forward and then backward. This caused the water to flow first over the stern and then over the bow. After a quantity of it had been bailed overboard in this manner, the crew climbed back in and, using the soles of their feet as paddles, quickly splashed the remaining water over the sides. Then the outriders

Diving Girls at Jolo

were lashed down and all was shipshape again.

For the benefit of the modern bathing beauty it is to be noted that these Moro girls found it unnecessary to shed their everyday attire to take to the water. Long, wide skirts trailed in the water without appearing to cramp the style of the swimmers. Some of these skirts were brilliantly colored when the divers first came to the ship, but the dyes were not fast and each time their wearers took to the water they left trails of color behind them like the tails of so many comets.

Then we went ashore. We had heard of the Chinese Pier, where all kinds of articles could be purchased—Moro mats, black coral bracelets, and old Moro brass. So the expedition went shopping. Purchases during the day were few. The quantity of desirable articles was small and the prices high. In the evening, however, the prices began to come down, more purchases were made, and by next day there was a marked decline in the value of stocks on the market. There were a few purchases of weapons, although it was feared that these, instead of having a history of war and adventure, had merely been manufactured for our special benefit when the natives heard of our coming.

The afternoon of our arrival there was a baseball game between the team from the Seventeenth Division and a native team. Also the officers of the Navy and the Army were invited to tea by the Princess of Sulu, sister of the Sultan, at her home in the town of Jolo. We all attended. The tea originally was in honor of the American women residents of the island and the invitation to the officers was an afterthought, but the latter were so well represented there might well have been some doubt if others were of the party. Although somewhat overwhelmed by the numbers of visitors around her, the princess managed to carry off the occasion well and with impressive dignity.

As guests of the civil authorities the

The Sultan of Sulu with a Part of His Bodyguard

next morning about tweny-five officers, including the commanders of the divisions and the tender, were taken in automobiles for an inspection trip over the island and a visit to the Sultan of Sulu. During this trip the principal places of interest were the Sultan's palace, the Jolo School of Agriculture and Industrial Arts, and a Moro fishing village.

The palace proper, a large affair of three or four stories, is still in course of construction and has been for several years. At present it boasts no walls, but is equipped with a roof, floors, stairways, and large wooden uprights to hold these in place. The Sultan does not live in the new building, but still lives in the old dwelling a short distance away. He received us in his new palace, however, shook hands with all most courteously and appeared much pleased with the visit. None of his present five wives was introduced, but we thought we observed some of them viewing the ceremony from the balcony of the old palace.

Later in the day the Sultan returned the visit, coming aboard the Canopus for dinner and bringing with him some of the more prominent of his subjects. Principal among these was Chief Muma who boasted thirteen wives. During the evening a dance was given ashore which was well attended by officers from both the Navy and the Army. Alluring as were the native ladies present there was not a great deal of dancing by the visiting officers, largely on account of not being able to make themselves understood.

My eyes were not more than half open when I found we were under way the next morning before daybreak on the short leg of our cruise from Jolo to Zamboanga, the place where the monkeys have no tails, and the source of much army legend. Sitting on the broad rail of the bridge with the captain of the S-38, I watched the dark outline of the shore become more clearly visible in the pink glow of the dawn and appreciated once more the tropical beauty of the place seen in the light of early day. But after the interest of "shoving off" from the tender had passed and we continued to steam along in column behind her, the quiet sea caused me to become more and more drowsy and I went below. I was busy trying out the merits of the captain's personal bunk when I was suddenly awakened by the call, "Rig for diving!"

How do you feel when you are going down in a submarine? You just don't feel, for the most part. You get all set to have something of that sort and then find it isn't at all necessary.

The part of the crew that is on duty goes, each man to his appointed station, to the various parts of the ship to which assigned. Officers verify the preparations that have been made, and when all are ready the captain gives brief commands. Valves are opened and there is a tilting downward of the deck forward. If you happen to be up on the conning tower just underneath the closed hatch that leads to the bridge you can see the nose of the ship submerge, then see the water rolling up along the deck and then see it as it splashes around you and finally close overhead. Then you almost have a feeling. But the sense of orderliness aboard the ship, the calm assurance and expert manner of the men at the controls keep away any feeling of apprehension and keep you interested in what is being done. Then the ship levels off. The captain shows you how to look through the periscope and after a peep you are delighted to know that you have not gone down so far that you cannot see the comfortable old tender steaming serenely ahead. Of course, there are times when the sub goes down to depths from which no one could think of using the periscope, but that did not happen between Jolo and Zamboanga. Once while looking through the periscope I saw another of the "pigs" coming to the surface like nothing more than a big fish that had tired of the deep water and had come to the top to play awhile.

In a short time we also began to come to the surface. It was done so easily and with so little fuss aboard that I could hardly realize we were up again until I climbed once more to the bridge and saw the Sulu Sea about me. The fresh air was good, but I think it was mostly being on the surface that made it feel so good, because the system of air purification below left little to be desired. Of course, while the ship was diving the Diesel engines were shut off and we proceeded under power of the electric motors.

Shrine in the Wall of the Old Spanish Fort at Zamboanga

By a little after noon we had slipped down along the reefs that border the shore at Zamboanga and, after some difficulty with the strong currents that sweep past the anchorage and the piers, the subs tied up ashore and the tender anchored out.

Our stay at this the principal port of Mindanao was all too short. Everybody welcomed the visitors and we of the Army found ourselves at home at Petit Barracks, where two companies of the 45th Infantry, Philippine Scouts, are stationed. The Army entertained with a dance in the evening, and during the afternoon we saw parts of the city and shopped, buying black coral trinkets and other souvenirs. Next morning many of us drove through the cocoanut groves along the shore over the excellent driveway from the city to San Ramón prison. The

The Shrine That Houses Magellan's Cross at Cebu

Japanese inhabitants of the city were celebrating some occasion connected with their emperor and were hosts at luncheon at the country club. Many would have liked to visit old Camp Keithly and the country around Lake Lanao, but this would have made necessary a stay of several days and was out of the question. At the end of twenty-four hours we were again under way.

At Cebu, our next stop, the spirit of Magellan still presides. You feel it as soon as you get away from the water front. You land under the frowning embrasures of the old Spanish fort and you proceed toward the center of the city but a short way when you come upon a shrine in which stands a great wooden cross. This is Magellan's cross. When he landed at Cebu on that eventful first trip around the world he set up a cross and mass was held. After his death in the battle on the small island a short distance off shore, this cross was preserved in his memory. The story tells us that when the base of this cross crumbled so it no longer would stand in the ground it was taken up and encased in new wood and again set up. Through the years this process has been repeated until now the cross has taken on much larger proportions than originally and it is declared that the superstitious among the island's inhabitants have come to believe that the cross grows. Be that as it may, one is impressed with awe and respect for that great explorer whose valiant deeds caused the cross to be erected.

Cebu, bustling city though it is, lacked something of the glamour of Zamboanga and Jolo. But we were received royally by the Chamber of Commerce. This organization provided us with automobile transportation across the island, where we could look across the narrow strip of water and see the island of Negros.

We remained at Cebu two days and then putting to sea in the late afternoon, we steamed up the coast a short distance to Magellan Bay where the tender dropped anchor and bade goodbye to the submarines. The latter departed to take up their positions from which they would launch their attack against the rest of the Asiatic fleet as it entered San Bernardino Strait. The next morning the Canopus also was under way when we awakened and late that evening we reached the waters along the southern coast of Luzon from which point we could see Mayon volcano smoking in the clouds. Seldom is this conical-shaped peak visible from passing ships along that part of the coast. It is usually hidden in mist and clouds, but this time we could see its peak sharply outlined and from a fissure just below its summit the steam was boiling in angry spirals.

That night we dropped anchor to await the developments of the engage-

ment between the subs and the rest of the fleet. The next day under reduced speed we steamed northward to Manila. Arriving once again inside the breakwater, we gathered our varicolored mats, our walking sticks, our weapons, our birds, and our trinkets and luggage and, looking much like a gypsy caravan, bade good-bye to our courteous hosts.

Not one of us will soon forget the call: "Rig for diving!"

Modern Maxims

CAPT. M. B. DRISCOLL, O. R. C.

From the Notebook of "General Experience"

When a nation scraps its army, the enemy scraps the nation.

War songs may not be pretty, but they sound better than the enemy's song of victory.

A nation that will not eat hardtack will eventually eat dust.

Peace is like ice—it is never so solid that it cannot melt.

"Critique" is polite French, until the colonel asks you a question.

A soldier who gets lost on a maneuver is not worth finding.

Pickett's charge was soon collected.

Soldiers who do not read history will never find their names there.

Tank Reorganization[1]

MAJ. SERENO E. BRETT, Infantry (Tanks)

REORGANIZATION seems to be the order of the day. It is submitted that any reorganization should be solely for the purpose of increasing battle mobility. Battle mobility is the only logical objective for any organizational study. It is all-encompassing, and is the essence of successful combat. It embraces fire-power, movement, supply, security, mental processes, and all other phases of battle. Any attempt to set up numerous requirements for reorganization is certain to invite confusion, the introduction of useless equipment, formations, and methods, and the adoption of complex and unwieldy organizations. In the last analysis, it is simply the question, will or will not this gun, this type of transportation, this method of supply, reconnaissance or security, this formation, this system of cooperation or coordination, increase our battle mobility?

The present-day possibilities of increasing battle mobility are demanding reorganizing and re-equipping. The reorganization must not again produce static units, but in the future must be a continuing process, if our scheme of national defense is to make full use of the developments in the prolific scientific field.

The reorganization of rifle units of the Infantry is now undergoing serious and practical study. It is also important that we analyze our tank organizations. Tremendous possibilities for offensive and defensive power have been developed with kaleidoscopic speed in the automotive field within the past few years. Antitank methods have received the most serious consideration in foreign armies since the World War, and in most of those armies powerful armament is provided for security against armored vehicles. In face of all these developments and the ever increasing number of tank enemies, our tank organization remains practically the same as in 1918. We have not even applied to our post-war tank organization the lessons we learned in combat.

There is little question but that the present tank organization, confronted by modern antitank means, will produce little but grief for tank commanders, and probably considerable embarrassment to the tactical plan of the higher commander who is depending on tank support. The tank is a most powerful weapon, but we must give it a chance to live by giving it a usable, well-balanced organization. At least it must keep pace with its enemies if it is to remain on the battlefield. Here again, it is important that the reorganization should be a continuing process, but there are certain drastic changes which should be made now to modernize the tank service.

In any organization study of tank units it is necessary first to determine the basic characteristics of the individual unit—the tank. With these basic characteristics, good or bad, determined, it is then necessary to determine how to exploit the good ones and

[1] By special arrangement between the author and the editors, this article appears concurrently in service journals other than the INFANTRY JOURNAL.

minimize the effect of bad ones through intelligent and progressive organization. The outstanding characteristics of the tank are protected mobility, protected fire-power, shock action, poor combat vision, dependence on supplies, relatively poor power of concealment, vulnerability to antitank weapons, and limitation of powers by antitank terrain. It is easy to see that the good characteristics are most desirable on the battlefield, but critical analysis of the poor characteristics leads the uninitiated to ask embarrassing questions about the sum total result of the balance between the good and bad. Based on our present organization, the tank officer of today must do considerable squirming before he can produce a satisfactory answer. He has for years been juggling with abstract thoughts on cooperation, teamwork, and so on, which may or may not have developed in him a sense of false security. If he has been analytical to the smallest degree he will have come to the realization that he has not in his own command those elements, normal to every battle, which will give him a powerful, well-balanced weapon. He must ask outside agencies for his normal needs—his smoke, his artillery protecting fires, his engineer support, and his communications. Also, he realizes that his supply and maintenance echelons have not the mobility of his combat echelon.

With this makeshift team he has the ball snapped to him and he attempts to "carry on." Vital members of his team he has never seen before, and are working with him only on a supporting basis. The team has never practised a single normal play together, and the mobility, training and equipment of his supporting members are not suited to his needs.

The progressive tank officer has a vision of a powerful, well-balanced team; a team sufficient within itself to meet the normal events of a good tank fight, and a unit which is able to give intelligent and powerful support to the rifle units which it is supporting. Such a dream will become a reality only by a reorganization which will exploit fully the powers of the tank and provide those elements which are normal and necessary to every tank fight. Again, the objective of such a reorganization should be to increase the battle mobility of the tank unit, thus making it a much more flexible and powerful aid to the supported rifle troops.

Study of any tank action makes it clear that there are certain elements which, had they been provided in tank organizations, would have increased greatly the battle mobility and, incidentally, the battle life of the tanks. A relatively small number of tanks with properly balanced supporting services unquestionably will accomplish more than a large mass without such support, or a larger number that depend on the very uncertain support from outside agencies which must be secured through a complex system of liaison or communications. When tanks need certain classes of support that support must "click" or the action is over and the battlefield becomes a tank graveyard. Witness the frightful execution done at Flesquieres by one German officer who manned a 77-mm. gun. Purely a case of a gun against a mass of unsupported tanks. The immediate result —sixteen tanks knocked out in a few minutes; the real result—the failure of the infantry division to reach its objective, due to the loss of tank support.

Specifically, those elements or services which are needed to make up a properly balanced and more effective tank organization are smoke, antitank gun destroyer (self-propelled artillery), pioneers, antiaircraft protection, reliable and fast communication, and suitable and sufficient reconnaissance, command, maintenance, and supply vehicles. Just how to fit these services into the scheme of organization to give tank units proper balance must be determined by practical and extensive field tests. The services are, however, as necessary to tank organizations as are the various auxiliary weapons which the rifle units were forced to adopt when confronted with modern battle conditions.

It is inconceivable in modern war that tanks should not make use of smoke as fully as is practicable. Aside from the smoke produced on general areas by supporting artillery or aircraft, tanks should have smoke immediately available to them for neutralizing antitank guns and observation posts and for covering their own withdrawal, their maneuver against armored vehicles, and for many other purposes. This requirement for smoke within the tank organization immediately brings up the question as to how it should be produced. Obviously, the simplest way would be to provide smoke shell for the tank cannon. However, the small caliber of the cannon and the limited amount of available ammunition precludes the possibility of developing an adequate volume of smoke by this means. Another method, which has received considerable attention experimentally, is to provide the tank with a smoke-producing apparatus which can be turned on and off at will. The release of smoke clouds by the tank itself is not favorably considered in many tactical situations. However, in some situations, such as screening a maneuver of the tanks, it should prove very efficacious. Inasmuch as this method of smoke delivery cannot be used in all situations that require the immediate development of smoke, it must be supplemented by other means. The remaining possibility is to produce smoke by guns or mortars which accompany the combat tank unit. It is believed that tank units should be equipped to employ both methods for producing smoke.

Artillery support is a constant need of assaulting tanks. Divisional artillery, by its preparation fires and concentrations or barrages, assists, of course, in breaking down the general resistance. During the actual assault, however, tanks must have immediate artillery support to engage antitank weapons and to assist in the destruction of hostile tanks. The enemy's antitank weapons will remain concealed until our tanks offer a favorable target. Due to poor vision, it is almost a hopeless task for a tank definitely to locate an antitank gun in the excitement of battle. Under our present organization, if an antitank gun is located the tanks have one alternative open to them: first, to call for support from the divisional artillery or infantry auxiliary weapons; and, second, to rush the gun themselves. The time necessary to secure support from outside agencies, even with the most perfect communications now in use, is so long that it permits the antitank guns to exact frightful toll of our assaulting tanks. During the World War tanks almost invariably chose the second al-

ternative—rushed the gun and took their losses. This method of overcoming antitank defense was most costly then; now, with a highly developed system of antitank defense and without effective supporting fires, it would be rank suicide. What we need is a gun of sufficient mobility to operate directly with the tank combat echelon; this gun to take position behind the assault waves and cover the advance of the tanks from one local objective to another. The gun, or guns, should be an organic part of the tank unit, as training in the recognition of antitank targets and in tank tactics is of paramount importance. During the last war such a gun would have been invaluable; in a future war, on account of the vast increase of tank enemies and the necessity for decentralizing support due to the increased mobility of the tank, this type of weapon will be indispensable.

Before and during action tanks have constant need for engineer service. Routes must be reconnoitered, marked and often prepared; obstacles must be removed; bridges must be strengthened and fords prepared through streams; mine fields must be destroyed or rendered harmless; and so on. At present the tank commander must ask for engineers to be detailed from other important work to render this service. If he gets them, he finds they are not specially trained to his needs and they are not equipped with proper tools or transportation. And again the tail wags the dog! A small detachment of pioneers is needed—probably in the battalion headquarters company—to meet engineer requirements of normal tank operations. The personnel, of course, should be specially trained and equipped with proper tools and adequate cross country transportation.

At present our tank organizations are totally unprotected from air attack. They have no weapon which can be brought to bear against aircraft. It is not recommended at this time that antiaircraft units should be included in tank organizations, but some thought should be directed toward the use of present tank weapons against aircraft, while on the march or in bivouac; or it may be found desirable to issue additional weapons, such as the caliber .50 machine gun, to provide additional protection.

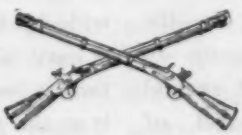
Tanks operate on relatively wide fronts. Hence, to exploit fully the mobility of the tank and to insure greater flexibility and ease of control, the most rapid applicable means of communication should be developed and provided for tank units. Slow means of communication seriously reduce the battle mobility of tanks and cause delays which may prove disastrous. Our present organization provides radio telegraph down to the company. From the company down, the only dependable means of communication provided for combat is the runner. True, the company is provided with a cross-country car and two motorcycles, but these are required for necessary reconnaissances, and for communication with supply and maintenance echelons, and in maintaining liaison with the unit supported. With the combat echelon of a company operating over an area roughly twelve hundred yards wide by fifteen hundred yards deep, it is easy to see that runner communication is so slow as practically to paralyze the unit. The British have been experimenting for several years and

have had considerable success with radio telephony for tanks. At present some of the units of the Royal Tank Corps are equipped with radio telephone receiving sets to include the individual tank. It requires no particular intelligence to determine the relative value of tank units controlled by radio telephone and partially armored command vehicles and similar units controlled solely by runners. Our authorities, of course, are keenly alive to the possibilities of radio telephony for tank use and are directing considerable attention toward the development of suitable equipment.

Reconnaissance before, during, and after action, is of vital importance in tank operations. Suitable vehicles, in sufficient quantities, must be provided to insure rapid execution of reconnaissances, else the battle mobility of the tank again slows down to the pace of the reconnaissance service. Reconnaissances must often be carried out under small arms fire. Therefore, reconnaissance vehicles must be provided with some armor protection to allow them to negotiate fire-swept areas, secure desired information as rapidly as is possible, and stand some chance of returning with the information. A vehicle similar in size to the British Carden-Loyd, preferably a wheel-cum-track type, will probably answer the requirements of a tank reconnaissance vehicle.

Behind the combat echelons of tanks follow the vital services of supply and maintenance. There is nothing more useless or annoying on the battlefield than a tank out of gasoline or broken down due to the failure of some small part. At St. Mihiel an entire American tank battalion was completely immobilized for nearly twenty-four hours because its supply train was jammed in a road block. Supply and maintenance vehicles were then and are now of the heavy truck type which must confine movements to roads. Fast cross-country cargo carriers, capable of negotiating the same type of terrain as the tanks, should be provided to insure adequate maintenance and supply service close behind the combat elements. A cross-country combat unit which must depend solely on roads for vital supply is far from a well-balanced, efficient organization.

Balancing of organizations along the above lines is most desirable even in our present tank units equipped with slow-moving war-time tanks if we wish fully to exploit the powers of this weapon and give it a chance to survive modern battle. With the adoption of the modern fast tank this balancing will become more necessary if we are to derive full benefit from its increased mobility. This balancing will immeasurably increase the flexibility and range of uses of tank units by eliminating the drag from the rear. Simple basic training will take the place of the present complicated multitude of details of co-ordination on the eve of battle.



The Training of the Infantry Team

CAPT. JOSEPH L. TUPPER, 24th Infantry
and
1ST LIEUT. JOSEPH I. GREENE, 24th Infantry

This is the first of a series of articles that describe the training methods of the 1929 Infantry Team, winner of the National Team Match. These articles show the great amount of thought and attention to detail with which the training of the team was conducted by its officers, Maj. B. G. Chynoweth, Infantry, team captain; Capt. Joseph L. Tupper, 24th Infantry, team coach, and Capt. J. P. Lyons, 24th Infantry, assistant team coach.

This, the first article, covers the general rules which governed the training. Four subsequent articles on the four training divisions will follow.—EDITOR.

THE experience of mankind in the use of firearms, from the first aiming and firing of a nail-loaded blunderbuss down through the history of shooting to include the winning of the 1929 National Team Match by the Infantry Rifle Team, can be expressed in a single thought—good rifle shots are not born, but made. It is, of course, desirable in forming a smooth-running rifle team to choose men who come up to a certain standard of temperament and physique, both largely hereditary possessions. But in the final analysis it is the training rather than any heaven-sent gift of skill, which makes a man able to place his shots one after another in or near the bull's-eye. Hence, it follows that we may ascribe the scores that the Infantry Team made at Camp Perry last summer to thoroughness of training.

On the other hand, it is just as true that the low scores of some of the other teams which competed were due to a lack of thoroughness of training.

The United States is reputed among nations to be a country of excellent rifle shots. Yet, if the results of the 1929 National Matches as a whole are to be taken as showing a cross-section of our best shooters, we must certainly hesitate before we lay claim to a world-beating ability in rifle marksmanship. In the belief, however, that American teams can reach an unequalled standard of excellence by proper training, and in the further belief that the methods of training which the present National Champions used are the most satisfactory and complete yet achieved, the authors present this series of articles. They will describe in detail the organization and training of the 1929 Infantry Team. They will place particular emphasis upon new equipment and new methods used. Where the training closely followed the basic marksmanship regulations (TR 150-5) the procedure will be indicated, for the most part, simply by reference to the pertinent paragraph or figure in those regulations. The development of the team will be described under four sequent headings: Preliminary Training, Individual Training, Team Training, and Team Shooting.

GENERAL CONSIDERATIONS

Before proceeding to a detailed description of the work, it will be best to indicate the more important new

equipment used and the general principles and ideas which were followed from the beginning to the end of the team training.

There was no attempt to depart from sound and well-proved teachings of marksmanship. These, as given in TR 150-5, were stressed at all times.

NEW EQUIPMENT

The application of these basic training principles was considerably improved, however, by the use of new telescopic aiming equipment. A long-range sighting and aiming device permitted aiming practice at all ranges. The T-scope, by means of which the aim, hold, and trigger-squeeze could be accurately watched in all positions of firing and at all ranges, also proved very valuable.

Besides these devices, the caliber .22 rifle, which Infantry Teams of the past have used, had an even greater part in the 1929 training. The specific uses of the .22 rifle, as well as those of the new aiming equipment, will be thoroughly described later in this series of articles.

As individual equipment of the firer, the standard equipment only was employed.

The belief that every shot fired is an important training step governed the expenditure of ammunition. During all stages of the training the expenditure was kept down to a minimum. When the progress of a squad member was not satisfactory, it was immediately assumed that there was something wrong with his basic training. He then had to stop firing and to go through the basic training steps that pertained to the weakness which he had developed, so that his fault might be detected and eliminated. Beyond doubt this method saved to the squad many good men who might otherwise have been eliminated.

PSYCHOLOGY AND MORALE

The application of individual and group psychology, perhaps for the first time in the training of a National Match team, received its due amount of attention. From the first assembling of the candidates at Fort Benning, the officers in charge of the team gave the morale factors primary consideration. The importance ascribed to them will be apparent during the remainder of this series of articles. It is sufficient to say now that nothing which could add to the comfort and contentment of the team as a whole, or to the well-being and steadiness of mind of its individual members, was overlooked.

PHYSICAL CONDITION

The physical condition of the squad members also had its proper place as a major consideration. It was necessary, of course, to eliminate from the squad early in its training period any candidate whose health was not normal or whose lack of physique interfered with his progress. To this end, as well as to obtain any other pertinent physical data, such as about vision, the candidate underwent a physical examination before beginning the training.

Thereafter, those whose health and strength remained up to par followed certain simple rules of exercise and habits. These rules were based on several governing principles. First, it was believed that any radical change in the normal habits of a man tends to upset his whole nervous equilibrium. Hence, all were asked not to train rigorously, but to lend their assistance by using moderation in living during the period of training. There was no ban

on smoking except during actual firing, but team members were asked to keep this habit within reasonable limits, using their own best judgment.

Another governing consideration was the fact that strenuous physical exercise quickens the heart action and uses up nervous and physical energy too greatly to have a proper place in the training schedule of a rifle team, particularly if such exercise is indulged in before firing. Therefore squad members conserved their energy for the actual training. Scheduled exercise was for the most part simply for awakening the circulation.

At the beginning of the training period there were setting-up exercises for twenty minutes after the completion of each morning's preliminary work. This was to improve the general physical condition of the squad. The exercises were sufficiently energetic to cause every man to perspire freely. At the end of this work the squad was dismissed immediately to give opportunity for bathing and change of clothing. These exercises, combined with the day's training work, were considered sufficient, and further indulgence in exercise was not encouraged. As soon as the team was in good general physical condition these vigorous exercises stopped.

The team training grew more strenuous after the first few weeks. In place of the exercise after the dry work, there was now a much less strenuous short early morning work-out; a daily ten-minute series of mild bending and stretching exercises before breakfast constituted this part of the work. These exercises were never vigorous enough to start perspiration or greatly quicken the action of the heart, but were more in the nature of circulation and elimination "awakeners." Here, it may well be stated that a man who suffers from even slight constipation cannot do his best shooting any more than he can give his best to any other work. This brief regulating period of exercise was continued to the end of the training period.

CADENCE

Because the best shooting is smooth and uniform, the subject of cadence received an unusual amount of thought and attention during the training of the 1929 team. It was believed that decisive, fairly quick shooting should be used in both slow and rapid fire, and that lingering and "gun wrestling" in the despatching of shots should be eliminated. To this end the firers were observed and timed in rapid fire. The time taken for getting into position, for aiming and firing, for the bolt action, and for the reloading with the second clip, was taken by stop watch for each man's firing, and from the data thus obtained, a standard cadence of rapid fire timing was evolved and put into practice.

The investigation and application of cadence firing brought out the irregularities in the rapid fire methods of each individual and permitted these irregularities, in large measure, to be smoothed out into a rhythmical, habitual firing method.

The use of cadence in slow fire established a smooth, normal firing method and, too, a limited number of seconds for the completion of each shot. If this time was exceeded before the shot had been fired, the firer was required to begin over again in his normal cadence.

BREATHING

Closely interwoven with the development of cadence was the development

of proper breathing methods. These methods were based on the physiological fact that holding the breath for any length of time beyond the normal causes a shortage of oxygen in the lungs, and that this, in turn, has a direct effect upon the heart and particularly upon the vision, exaggerating in a marked degree any slight defect in the eyes and producing a blurring of the sights. For this reason, as well as to establish a normal cadence in slow fire, the time limit mentioned above was established for the firing of each shot.

In rapid fire, the breathing must coincide with the whole firing cadence. Hence, a standard breathing system was adopted. This system applied principally to the firing of the last four shots in each clip. The breathing for the first shot of each clip was done in the normal manner. As soon as the first shot was fired, the firer forcibly expelled all the air in his lungs as he brought back the bolt, immediately refilling his lungs with a substantial though not exaggerated inhalation. This supplied him with air until the completion of the next shot. This system, in addition to regulating the breathing in accord with the business of firing in hand, caused the firer to have a full breath of clean air to supply his lungs during each shot. The breathing method was required in an exaggerated manner when first made a part of the training. It soon became habitual and normal.

SCHEDULES

In order for the work to progress smoothly it was, of course, entirely planned in advance. Master schedules covered periods of six weeks each. They contained, in brief, information regarding the work to be done and the accomplishment desired. These schedules were placed in the hands of the squad members about a week in advance, which allowed ample time for the study of the information. Then, weekly advance schedules treated every part of the week's work in detail. They contained references to the training regulations which were applicable to the work and which the squad members were to study. These weekly schedules, which also announced personnel changes, were ordinarily distributed on the Saturday before the week to which they applied.

Besides these regular schedules, frequent memoranda issued whenever circumstances required them. The Team Captain wrote them in a direct, informal style. They contained discussions of the training work and of everything pertinent to it. They were couched in language which aimed at keeping the morale of the squad at a high point. They contained detailed explanations in graphic terms of the reasons for the stress laid upon certain points in training, especially the newer points. These memoranda contained pertinent comparisons in order to make clear the matters discussed.

The following paragraphs from two of them illustrate their usual style. In addition both of them express one of the main ideas which governed the whole training period.

First of all, I believe in standardization. In every field of human activity, for at least a century, standardization has been winning its battle against individualism. There are countless reasons—chief among which are the increased ease of supervision, the possibility of machine production as against hand production, the resultant increase in quantity production, and,

with the income thus earned, the improvement of quality.

This is just as true of shooting as of automobile manufacture. Standardizations of methods led to the development of TR 150-5. . . . By a refinement of our standards—employing selected material—we should then be able to turn out a greater quantity and an improved quality of team shots. . . .

The above excerpt is from a memorandum for the coaches. The memoranda for general distribution were written usually in a more direct style. The following paragraphs are from a memorandum on the subject of cadence.

1. At the present stage of development, I want all candidates to begin to watch their cadence.

2. We want to turn out bull's-eyes the way Henry Ford turns out automobiles—by the millions. The way he does it is to perfect his machinery. We want to perfect our machinery so that it works exactly the same way each time. The result of this will be cadence.

RECORDS

Complete records were kept of each day's scheduled work. Graphs upon which the firing scores were recorded were plotted from day to day so that each individual's progress might be seen at a glance. A separate graph was used for each firer and each range. This system proved invaluable because of the ease with which it permitted each man's work to be studied.

STANDARDS

Upon each score graph was placed a standard line in red. These standards were set high enough so that they were not frequently attained, but were nevertheless within reasonable reach of every man when he was firing his best. Thus, the team standard for two hundred yards rapid fire was set at 48.5 (the individual standard at this range was 49). It was believed that if the team made this mark it would be sure to excel all other teams. That the standards were placed high is shown by the fact that the two hundred-yard standard was the only one that the team reached in the final matches, although all the team scores for the other ranges nearly touched the standard lines.

In the comparison of the scores made to the standard set, allowance was always made, of course, for variations in atmospheric conditions. When the graph line of a firer dipped sharply down from his previous scoring, and could be correctly explained by the fact that weather conditions were poor, notation was made on the graph to that effect.

COACH-AND-PUPIL METHOD

The coach-and-pupil method was used during the entire training. As far as possible, inexperienced men were paired with those of experience. These pairings were frequently changed so that the newer shooters could learn something of the methods of all of the old ones, and yet not remain paired with a single old hand long enough to acquire the bad habits that he might have. The various pairings were also observed from the psychological standpoint. Records were kept, not only of the pair scores, but of the degree of harmony in which the various pairs went about their work.

ORGANIZATION

Having covered thus far all the important general ideas which governed the conduct of the training, we may now consider the organization of the candidates upon reporting at Fort

Benning for the preliminary training.

The basic unit of instruction was the pair. Then came the group of two pairs. Included in each double group was a firer who had been a member of the Infantry Team squad in the past. He handled the work of his group under the direction of the Team Captain, the Team Coach, and the assistant coaches. At times during the training it was found necessary to divide the entire firing squad into two or three large groups in order to test certain specific training points.

ISSUE OF EQUIPMENT

Upon the completion of the organization the squad members received their individual equipment. It was carefully inspected to see that it was in faultless condition. The shooting coats were at this time inspected with care to see that they fitted the wearer correctly and were padded properly. The Team Coach then told the squad exactly what was expected in the care of equipment, stressing the fact that no man can shoot better than his equipment permits, and that high scores are impossible unless equipment is kept in perfect cleanliness and working order. This point was carefully checked at each of the regular Saturday inspections which took place during the whole of the training season.

The second article of this series will appear next month. It will describe the individual training of the members of the Infantry Team Squad.

Modern Maxims

CAPT. M. B. DRISCOLL, O. R. C.

From the Notebook of "General Experience"

A maxim is like a gun—it has no force until put into use.

Canute tried to stop the tide with words, but he tried other ways to stop the Britons.

Because you cannot understand foreign words of command does not mean that the foreign soldier has the same difficulty.

From Colonial Times

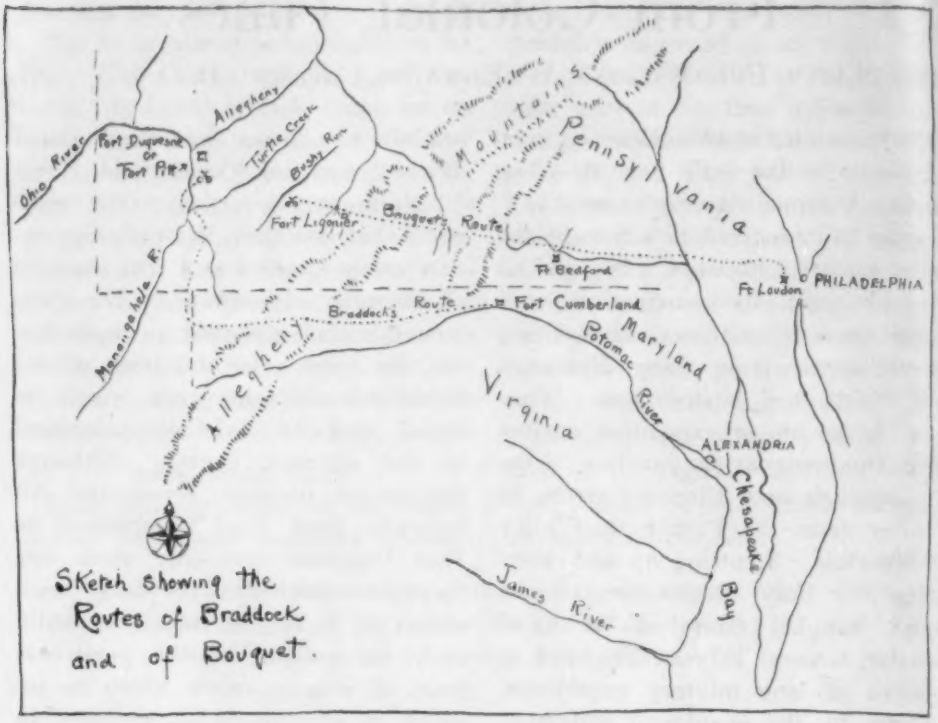
LIEUT. COL. WILLIAM W. EDWARDS, Cavalry (D. O. L.)

IN the winter of 1755 there was great bustle in the little town of Alexandria, Virginia. A very unusual happening had occurred to interrupt the quiet tenor of its ways. Two picked English regiments accompanied by a large train of artillery, all bearing fresh laurels from many European battlefields, had landed there. They were to go on an expedition against Fort Duquesne, at the junction of the Monongahela and Allegheny rivers, to recover from the French the Valley of the Ohio. Strutting up and down along the busy wharves moved the squat, haughty figure of the Commander, General Edward Braddock, a veteran of long military experience. Though by the unanimous judgment of his contemporaries he was an obstinate and incurable martinet, lacking in common sense and impatient of expedients not laid down in books, nevertheless, being a protégé of the Duke of Cumberland, the King had appointed him to command all the British forces in the American Colonies. He was to lead the important expedition against Fort Duquesne in person.

Leaving Alexandria in the spring, Braddock arrived in about a month at a point near the headwaters of the Potomac, where he built a fortification called Fort Cumberland, which he intended as a base of supplies. Tarrying there to collect the necessary wagons, animals, and commissaries, Braddock, with his imposing military pageant, set out June 10, into the perils of an unknown mountain wilderness with all imaginable confidence. To anyone who now drives along the National Highway out of Cumberland, West Virginia, over practically the same route that Braddock followed, his venture easily appears as a true example of the valor of ignorance. The steep mountains being clothed in virgin forest, the very rocks and trees offered formidable obstacles upon which he found that he had not calculated in the slightest degree. Although the actual distance across the Alleghenies from Fort Cumberland to Fort Duquesne was only about one hundred miles, with the delay occasioned by having to repair or build roads on account of the ponderous train of wagons—upon which he insisted, in addition to his artillery, in order that he need not forego any of the luxuries of civilization to which he and his European-bred officers had been accustomed—another month was required to accomplish the arduous journey.

The advice of George Washington, who was an aide on Braddock's staff, that there "would be insuperable difficulties in attempting to traverse the mountains with a train of wheeled carriages" at length became a pronounced fact.

The slow, tedious, daily marches imposed by the heavily laden wagons at length worried Braddock to the extent that he compromised with ideas that he had formerly scorned. He saw, half-way, that to which he had been blind in the beginning, namely, that only a quick march waited upon a decisive blow. But he paid the penalty



for having delayed his decision, for when the light broke upon him he had to commit the blunder of dividing his forces. Leaving a heavy escort with his impedimenta to follow later, he went forward with twelve hundred of his choicest light troops. Besides the British regulars, there were in this "advance division" several companies of pioneers to cut the roads, two independent Colonial companies from New York, some Virginia Rangers, and a superb bodyguard for the commander in chief. The long column covered about four miles.

Benjamin Franklin, by whose influence Braddock had secured most of his wagons from Pennsylvania farmers, had warned him that when the column became entwined in the mountain wilderness the Indians would cut it into pieces like thread. To this bit of advice Braddock tersely replied: "These savages may be a formidable enemy to raw American militia, but upon the King's regular and disciplined troops they can make no impression." The practical suggestion, obvious to his Colonial officers, to throw out Indian scouts and Virginia Rangers well in advance he likewise spurned with haughty contempt and superciliousness. As a result he lost these opportunities, most of his Indian allies deserted, and the loyalty of his Colonial troops suffered seriously.

Two years before, on his mission from Governor Dinwiddie of Virginia to the French forces on the Ohio, the youthful George Washington had reconnoitered the site of Fort Duquesne. He reported the plateau upon which the fort was afterwards built as a suitable site for a fort, lying as it did,

twenty or thirty feet above the two rivers—the Monongahela and the Allegheny—each a quarter of a mile across and each of which is equally commanded. Washington's description of Fort LeBoeuf contained in the thrilling pages of his Journal may be taken in its essential features as applying equally to Fort Duquesne. The sides were four log houses; there were bastions made of piles driven into the ground and standing more than twelve feet above it, port holes for cannon, loop holes for smaller arms, eight six-pound pieces in each bastion, one four-pound piece before the gate, several barracks and other structures such as stables and a smithy outside of the fort, canoes of birch bark and more of pine hauled up on the banks of the two rivers.

Fort Duquesne was insufficiently garrisoned. It might readily have been reinforced by water except that, owing to England's command of the sea, the reinforcements were not available.

On the fateful morning of July 9, 1755, Braddock, having twice crossed the Monongahela [1], arrived within about fifteen miles of his destination, the little lonely log fort which must have fallen if he had even gotten his heavy artillery within range of it. Washington was often heard to say in later life that the most beautiful spectacle he had ever beheld was the brilliantly arrayed British column, that morning marching with precise step as though on parade in Saint James Park, on the right the sparkling river flowing tranquilly, and on the left the deep dark forest overshadowing them with its silent, solemn, and sinister grandeur.

It was not necessary for the forest echoes to herald the British advance. Keen Indian eyes had followed Braddock's force on every march since it left Fort Cumberland (none of which exceeded three or four miles a day) and carried the news back to Fort Duquesne. There, as Braddock approached, much consternation ensued. The commandant was in favor of withdrawal, but was dissuaded by his second in command, a brave though obscure young lieutenant named Beaujeau, who obtained reluctant permission first to try to turn the tables by a surprise attack. When Braddock's advance guard under Captain Gage (who later became better known in the Revolution) was toilfully ascending a slope, where the woods were densest, there was observed among the trees the brilliant and conspicuous uniform of a French Colonial officer. A wave of this officer's cap was the signal for a roar of musketry and a burst of savage yells. Volley succeeded volley from an unseen foe. It seemed indeed as if the trees themselves were animate enemies and that hell itself was sputtering all about them. The British formed in close masses and fired helplessly at rocks and bushes and trees wherever they imagined they saw a puff of smoke. The main body hastened forward to the support of the bewildered advance guard, as expeditiously as its cumbrous length would allow. But its close masses, alas, only served to increase the slaughter. A false military pride made Braddock spurn cover; he even struck with the flat of his sword men whom he saw instinctively seeking it in the rain of bullets which poured down upon them.

[1] A narrow pass on the east side of the river, unsuitable for his "wheeled carriages," forced Braddock into these two river crossings.

The despised Colonials were the only troops present who appreciated that the only way to fight Indians was in their own style, but when they took open order under cover of the trees they exposed themselves to galling fire from the rear, as well as front. The devastating attack in front gradually enveloped the British flanks, until within an open valley they were virtually hemmed in on three sides, with the river behind them. Forbidden by their officers to break their decimating ranks, these English veterans stood in close order, there in the open, for three long terrible hours—a huge, bright red target for an invisible foe on whom they wasted their ammunition as thoroughly as if they had been firing into the air. Out of eighty-six officers, twenty-six were killed and thirty-seven wounded. Then the formidable uncanny matter of fighting a demoniacal and unsubstantial enemy became more than even disciplined British regulars could bear. As they could not stand interminably to be shot down like sheep, so like sheep they broke and fled—like sheep pursued by wolves. A British army some thirteen hundred strong was utterly defeated and half destroyed by a few hundred French and Indians.

Useless was the personal valor of Braddock who, brave to rashness throughout the unequal engagement, was everywhere encouraging his men by his example. His stupendous ignorance of the ways of the wilderness and its savage denizens, an ignorance aided and abetted by his overpowering egotism, made his cause a hopeless one. At last he fell with many wounds. He died and was buried there in the wilderness where he had sacrificed his army.

Crève Coeur, the French commandant of Fort Duquesne, could not believe his ears when told of what had happened, and could not divest himself of the fear that Braddock might rally his forces and still attack the fort. His fears were, however, groundless. The only common thought of the survivors of that once fine army was to get back alive to Fort Cumberland as rapidly as possible; their fevered imaginations saw an uplifted tomahawk and a scalping knife behind every quaking bush. Around the ramparts of Fort Duquesne that night was held an Indian war dance in celebration of their victory, the copper skins of the participants contrasting strangely in the firelight with the scarlet of the British coats which they wore. This was all indeed that saved Braddock's pitiable straggling remnant from utter extermination.

The Indians soon dispersed to their distant hunting grounds, carrying scalps and booty such as had never before been equaled in Indian traditions, and leaving behind them the little log French fort in the wilderness at the headquarters of the Ohio as lonely and unprotected as before.

* * *

We come now to the spring of 1763, when the bones of Braddock's men had been whitening in the wilderness for eight years. After several ineffectual attempts against the remote Fort Duquesne, the scene of Braddock's inglorious defeat, an English expedition instigated by the indefatigable Pitt was as last unexpectedly successful. English tenacity accomplished what numbers had formerly failed to do. Seized with a fear which magnified their own weakness, and this time there being no lion-hearted second in com-

mand, the French garrison burned the fort and by the light of the flaring embers escaped down the Ohio River in boats. The English took possession of the blackened ruins, rebuilt upon the charred foundations, and in honor of their great militant Prime Minister, named the new fortification Fort Pitt.

The plan of Pitt to drive the French from North America had borne fruit at Quebec; and now, after these changeful years, the Ottawa chief, Pontiac, maddened by British encroachments, had devised a general uprising of the tribes northwest of the Ohio to stem the tide of their invasion. Many frontier forts fell victims to the Indian tomahawk. The defense of Detroit and of Fort Pitt were alone successful.

A relief expedition was organized in the vicinity of Philadelphia. The command was given to a Colonial officer, Col. Henry Bouquet.

Parliament had raised for American service a regiment of Provincials who had taken waste lands along the frontier—strong, hardy men who spoke a foreign tongue. Bouquet himself came from Switzerland, that brave little mountain republic which has furnished so many natural soldiers in the past. He had evidently, like so many of his countrymen, been a soldier of fortune under the banners of the King of Sardinia and of Holland.

Bouquet's little army consisted chiefly of German emigrants who had settled in Pennsylvania and other provinces. The remnants of two regular regiments of Scotch Highlanders, though weakened by sickness, had survived the enfeebling service of the West Indies. In numbers this army did not approach the total of the slain that Braddock had left in the wilderness. Bouquet had not had the experience or the reputation of Braddock and was his opposite in nearly every other respect. He had carefully studied the wilderness and frontier tactics. So practical was he that it is said that, for the sake of experience he had shouldered a rifle and done duty as a scout after he received his commission as a field officer.

In compliance with his orders Bouquet had, like Braddock, no alternative but to commit his command to a vast and forbidding wilderness fashioned by nature for ambuscades and inhabited by a wily foe. He took, however, the northern or Pennsylvania route, which placed him in contact with more settlements, and lightened the problem of supply, and for this reason was preferable to the southern or Virginia route which Braddock had taken.

Bouquet also, I feel sure, fully appreciated the formidable nature of the unbroken silent forest which lay before him, the vicissitudes of which could not be equalled in any phase of civilized warfare.

The convoy of wagons and cattle intended for the relief of Fort Pitt formed the center of his caravan. Advance, rear, and flank guards, a strong escort, and far to the front selected and experienced frontiersmen, who minutely scouted and examined the woods, protected the march.

Everywhere along the beautiful Cumberland Valley which Bouquet's column cautiously followed were congregated pitiable groups of settlers who had fled from their homes before the ravaging bands of Pontiac's marauders.

Fort Ligonier, the last of the frontier outposts before Fort Pitt, was

reached August 2. For weeks it had been blockaded, but at the approach of Bouquet, the Indian besiegers disappeared into the forest depths beyond.

At Fort Ligonier, where he remained two days, Bouquet left his oxen and wagons and went on with one hundred and fifty pack horses and a few cattle. He decided to march his force to Bushy Run on the second day, and then by a forced march to cross Turtle Creek with its "dangerous defile and craggy hills" under cover of darkness. As he was nearing his intended camping place shortly after mid-day, a startling rattle of rifles, such as Braddock had heard, halted the advance guard. Despite his seemingly ample precautions Bouquet too had fallen into a savage ambuscade. His plans were, however, prearranged, and in conformity to them the convoy hastily assembled and the troops formed into line. The screeching imps in front gave way before a well-directed volley followed by a charge with the bayonet. But their retreat was immediately succeeded by a fresh outburst of Indian war whoops on either flank, while a confused noise in the rear was unmistakable evidence that the convoy was attacked. There burst upon Bouquet's men the sickening realization that they were surrounded. Nothing was left after driving off their assailants but to form a circle of defense with the convoy camp in the center. Let no modern Braddock deprecate the seriousness of the situation. The fierce foe was altogether as dangerous to encounter under these conditions as if possessed elsewhere of all the modern means of warfare. The Indians would rush up and make desperate efforts to break the circle and penetrate the camp. Brisk counter attacks apparently had no prolonged effect, for the red devils would give away when pressed, ever to reappear noisily in another quarter.

So the fight went on without intermission for seven hours—twice as long as Braddock had lasted—until the forest grew dark. Even then, the Indian war cries still resounded at frequent intervals from the surrounding gloom and a dropping fire on the camp throughout the night kept sleep from tired eyes. Lack of water and the uncertainty of tomorrow's outcome combined to render the condition of the defenders well nigh unbearable, yet implicit confidence in their commander kept every man composed. In his dispatch that night through the Indian lines to Sir Jeffrey Amherst (who had sent him upon the expedition) Bouquet, while stressing the cool and steady behavior of his troops, shows that he was under an uncertain impression as to whether he would be able to survive the expected conflict next day.

Ushering in the early dawn through the dim gloomy aisles of the woods came the renewed red attack more coordinated and more determined than before. The same tactics held on either side. The savage fire around the extensive circumference soon became practically incessant and the savage onsets more and more audacious. The morning was already half spent. While the Indians seemed gaining in strength and confidence, Bouquet's weakened line, while yet unbroken, was decidedly wavering. If his brave little band of survivors would escape the fate of Braddock, it looked as if a miracle must happen. The keen and never-tiring mind of Bouquet, on which the responsibility rested, arose to the occasion and proved that the prolonged con-

fidence of his men was not misplaced. Based upon his intimate knowledge of Indian character, he conceived in the midst of confusion and excitement and despair an original and masterly bit of stratagem—a *coup de guerre*—which his disciplined men, rising above hardships and fatigue and almost certain disaster, nevertheless were happily able to fulfill.

Since the Indians were fighting, as was their custom, in a widely dispersed circle, Bouquet saw that his only chance to decide the battle in his favor was to draw the majority of them together so he could attack them. He also knew that, frenzied with success, they were eagerly awaiting the first signs of a retreat to leap forward to the expected massacre. To achieve his object, he would play upon their confidence. Orders were therefore suddenly given for two companies to fall back into camp, their withdrawal being covered by the contiguous troops on either flank, which by opening files to cover twice their former front, were drawn in quickly as if covering the retreat of their comrades.

This move, being intended as a feint, was, as Bouquet expected, entirely misunderstood by the Indians. Enticed by the ruse, they rushed forward so impulsively toward the gap created by the withdrawal that the thin line could scarcely hold together sufficiently to prevent them from bursting into the camp. But the combination was made so quickly that for the short time necessary to put it into effect it was able to stand the strain and to repel the Indian onslaught. The two companies which had apparently retreated, in the fulfillment of their part of the plan now moved swiftly out of camp into that part of the surrounding forest which the Indians in their impetuosity had recently vacated. Their movements were covered from sight by a densely wooded depression in the ground. Making a detour through the woods, they came suddenly and unexpectedly to the Indians upon the right flank of the advancing red horde, whose dense confused mass offered an excellent target. Then followed a withering volley with a bayonet charge, the yells of the Scotch Highlanders even drowning those of their savage foes.

The shock proved irresistible. The Indians were driven like cattle around Bouquet's defensive position, his other companies crouching with loaded rifles ready to pour in their concentrated fire upon the red throng as it crossed their front. After delivering another volley without giving the Indians time to rally or reload, four of Bouquet's companies now united in pursuit. The small remaining part of his line had meantime held its position, but the majority of the Indian attacking force, recently so full of confidence, was now in full retreat and the rest soon lost heart and vanished whence they had come, into the mysterious surrounding forest.

The Battle of Bushy Run has been called the best contested battle ever fought between red and white men. The Indians used their greatest cunning, and yet they were foiled.

Bouquet had half as many men as Braddock and he was opposed by a numerically greater force. He had no reserve force behind him as Braddock had. In short, his situation was far worse in every way. But he did not lose heart and did not lose his head.

Before going out in command of a

military expedition one must prepare himself for his particular task. So well was Bouquet prepared for the hazards of the wilderness that he displayed a power of adaptability and fertility of resource superior to those of Indians themselves and one which snatched victory from defeat. In an almost miraculous manner he struck the first decisive blow which ultimately broke the Conspiracy of Pontiac and brought peace to the frontier, and he did this with Braddock's last pathetic regretful words, "We will know better next time," ringing in his ears.

"Strategic science," said Marshal Foch, "is not a group of formulas or a set of principles. *It is a knowledge which the chief must make a part of himself. It must leave the mind of the commander so open that he acts on accurate information and not on preconceived ideas and hypotheses. But the most brilliant qualities of intelligence are nothing without the will to understand.*" In the absence of that will, Braddock is conspicuous today in the minds of each succeeding generation of Americans, for the record of his unnecessary defeat has been published in every American school history. Without the will to understand, military commanders have not won and can not win victories.

Modern Maxims

Capt. M. B. Driscoll, O. R. C.

From the Notebook of "General Experience"

If our Texan heroes had been weaklings, the Alamo would now be a garage.

Bunker Hill monument may be in the wrong place, but the battle was not.

Caesar found time to write, but he first did things to write about.

When fatheads run an army, it will soon be skinned.

Politics and the army will not mix—the army always sinks.

Our Tanks

MAJ. RALPH E. JONES, Infantry (Tanks)

IV

THE TANK SCHOOL AND THE TANK BOARD

IN JULY, 1919, a few months after our tank units had returned to the United States from overseas, a tank school was established at Camp Meade, Maryland, the new and chief station of the tanks. At its inception, the school was known as the "Tank School of Instruction." A few months later its name was changed to the "Tank Corps School." In the summer of 1920, when the Tank Corps was disbanded as such, the name was changed to the "Tank School."

The purpose of the school has always been to train both officers and enlisted men in the special subjects that pertain to tank units. It has been the practice, however, to train the enlisted men only in their own particular specialties, while the course for officers has been much more comprehensive in scope. Thus the officers have spent longer periods as students than the enlisted men, but the latter have spent more time than the officers at their particular specialties.

When the school was started, the courses were relatively few in number and short in duration. It was then possible to graduate more than one class of officers per year. As the school developed, however, courses were added and the other courses became more thorough and of greater duration. It therefore soon became impossible to graduate more than one class of officers per year. The initial courses were merely: light tank mechanical course, light tank minor repair course, light tank driving course, machine gun course, six-pounder gun course, and reconnaissance course.

The present officers' course covers the following subjects:

Motors. Internal combustion engines for tanks, trucks, and other automotive purposes. The theory, functioning, and practical details of such engines, both in general and as to particular types and makes; fuels, carburetion, ignition, lubrication, cooling, starting, etc.; adjustments, repairs, and trouble shooting.

Ignition Systems and Battery Maintenance. Theoretical and practical instruction in electricity and its application to the ignition and other electrical systems of tanks and other motor vehicles, including the maintenance of batteries and other parts of such systems.

Vehicle Chassis. Trucks, automobiles, and motorcycles, exclusive of motors and construction, functioning, driving, servicing, and maintenance.

Light Tanks. Construction, functioning, driving, drill, servicing, and maintenance.

Heavy Tanks. Construction, functioning, driving, drill, servicing, and maintenance.

Weapons. Construction, functioning, operation, and care of the tank machine gun, the 37-mm. gun, and the six-pounder gun.

Tank Marksmanship. With the tank weapons mentioned above.

Tank Combat Practice.

Tank History.

Tank Organization.

Tank Tactics. The principles that govern the employment of tanks, the

details of tank tactical methods, tank combat orders, tank movements, and supply.

Tank Reconnaissance and Intelligence. Maps, aerial photographs, reconnaissance, sketching, reports, routes, sites, and study of ground with reference to its use by tanks. Adaptation of such information to the use of tanks units.

Chemical Warfare. A one-week course, given to the class at the Chemical Warfare School, Edgewood Arsenal, Md.

The course for National Guard and Reserve officers covers a period of three months, beginning about March 1 of each year. This course, although similar to the Regular officers' course, is shorter in its various elements and includes nothing pertaining particularly to the heavy tank.

The enlisted men's courses are:

Course	*Hours*
Motors	384
Battery Maintenance	60
Communications (largely radio)	1020
Gunnery:	
Machine gun	60
37-mm. or six-pounder gun	60
Reconnaissance	480
Stenography and Clerical	990

It is not the practice to permit an enlisted man to take, during one year, more than one of the above six courses.

The table below shows at what capacity the School has been operating and gives an indication of the increasing trend in the duration of the officers' course.

The present average duration of the enlisted men's courses is about seventeen weeks. The officers' course utilizes the entire school year from the middle of September to the latter part of June.

The Commanding Officer of Fort Meade is the Commandant of the Tank School. The officers on duty under him with the school (exclusive of students) are: one assistant commandant (colonel), one secretary (captain), seven instructors (captains and first lieutenants).

The School is housed entirely in temporary wooden buildings constructed for war purposes, and is somewhat cramped for space. It is fairly well equipped with shops, tools, tanks, motor vehicles, engines, and other articles to facilitate practical instruction. The courses in motors and vehicle chassis have been especially fortunate in securing gratis from manufacturers motors and vehicles which have contributed markedly to the efficiency and

NUMBER COMPLETING COURSES

Year	*Regular Officers*	*N. G. and Res. Officers*	*Enlisted Men*	*Hours in Regular Officers' Course*
1919-20	29	—	1068	—
1920-21	37	—	1200	—
1921-22	48	—	800	—
1922-23	40	8	170	—
1923-24	20	—	379	570
1924-25	31	10	539	600
1925-26	26	5	256	600
1926-27	24	5	185	735
1927-28	24	8	212	780
1928-29	36	7	86	1035
1929-30	52 (e)	?	200 (a)	1121½

(e)—entered. (a)—approximate.

practical nature of the courses. Without them, these courses would have been greatly handicapped.

The instruction is well balanced in all courses as to theory and practice. Variety in the nature of the work prevents monotony. There are lectures, shop work, drill, driving, firing, terrain exercises, tests, and other activities. The student officers all seem to be keenly interested in their work and derive much pleasure and benefit from it. It may be noted particularly that they obtain a rather thorough mechanical knowledge of gasoline engines, tanks, and other motor vehicles.

Most student officers are, upon graduation, assigned to tank organizations for several years. The enlisted students come largely from the tank battalions stationed at Fort Meade and are returned thereto after graduation. The smaller number come from and are returned to other stations.

THE TANK BOARD

A board of four officers, known as the Tank Corps Technical Board, was formed at Camp Meade in 1919. The date of its original formation is not known to the writer. However, the board was in existence in September of that year and on the 24th of the month rendered a brief report on its examination and test of a semi-automatic 37-mm. gun for use in a tank. This Tank Corps Technical Board continued to work under the same name and under the supervision of the Commanding Officer of Camp Meade until November, 1920, notwithstanding that the Tank Corps was legislated out of existence in the summer of 1920. This Board seems to have existed for the same purposes as the Tank Board which came into existence later. It made studies, tests and recommendations about tanks, tank equipment, tank unit transportation, and like matters.

During the years 1921 to 1923, inclusive, it appears that there was no board for continuing the work of the Tank Corps Technical Board. It is believed that temporary boards were occasionally constituted, instead, for the consideration of particular matters.

On October 28, 1924, with the approval of the Chief of Infantry, the Commandant of the Tank School appointed the first Tank Board. This also consisted of four members. The order that appointed the Board included the following as to its duties:

"The Board is charged with the studies of such subjects as may be referred to it by the Commandant, the conduct of experiments and tests ordered by him, and with the preparation of conclusions and recommendations resulting therefrom. In general, the purpose of the studies, experiments and tests to be ordered will be to keep abreast of mechanical improvements, cooperate with the Ordnance and other arms and branches of the service in matters of mutual interest to them and the Tank School, and to facilitate tank development. It shall be a continuing body, and upon completion of the Tank Training Regulations by the Board appointed by Special Orders No. 31, this headquarters, c. s., will have referred to it all questions pertaining to improvement of such regulations.

"The Board is further charged with initiating and bringing to the attention of the Commandant new matter which may develop during the course of its operation."

Army Regulations 75-60, April 30, 1926, put the Tank Board on a somewhat different basis. It provided that the Tank Board would consist of the

Commandant and the Assistant Commandant of the Tank School, three officers to be designated by the Chief of Infantry, and an officer of the Ordnance Department. Unfortunately, however, apparently due to a shortage of officers, this reorganization effected but little improvement, for each member of the Board continued to perform his duties as such in addition to other primary duties. The recorder was the only member who could devote the greater part of his time to tank board matters.

In the summer of 1928, upon the recommendation of the president of the Tank Board, the recorder and two other members (not including the Commandant, Assistant Commandant, or officer of the Ordnance Department) were made available as active members of the Tank Board with that as their primary duty. This was accomplished through securing their appointments to their positions by War Department orders. At the same time, a suitable additional officer at the same station was detailed on special duty as Test Officer for the Tank Board. Making available the major portion of the time of these officers for the work awaiting their attention was an important step in the right direction. The favorable results therefrom will be more apparent with the passage of time.

The Tank Board now, like the Infantry Board, is a part of the office of the Chief of Infantry. It is concerned with the development of, or improvements in, tanks and other equipment for tank units; with the preparation of, or revision of, pertinent regulations, tables of organization, tables of equipment, and the like. It acts on matters referred to it by the Chief of Infantry, and it may initiate projects along suitable lines. In the case of initial requirements for new tanks or other new equipment, the Board prepares "performance specifications." The appropriate supply department having, upon request of the Chief of Infantry, produced such an article, it is referred to the Tank Board for test. The Tank Board has the article tested (usually by its test officer), finds the facts, and renders a report. In its report the Board states its opinion as to whether the article meets the requirements, gives a detailed statement of deficiencies, if any, and recommends either that the requirement be cancelled, that development be continued, or that the article as developed be accepted and adopted as standard.

From the standpoint of progressive development, the work of the Tank Board is highly important. It exercises a valuable coordinating influence between the tank troops and the supply departments. It handles about fifty items per year that require test or study to a material degree, and numerous minor matters in addition. In the not distant future the Board will submit a revision of nearly all of the various regulations that govern the training of tank units.

The members of the Board and the test officer work on their own projects individually. The Board meets frequently, and at its meetings it supervises and reviews the work of the individuals.

In closing this series of articles on Our Tanks, particular attention is invited to the important developments in progress. It may be stretching a point to say that the fast modern tank has been produced, up to the present

date. But, whether it appeared yesterday or appears tomorrow, we may say with excellent reason that the development of this instrument of war is one of the few outstanding achievements within the field of military materiel during this half-century. This weapon, which did not exist in the World War, is obviously in its infancy. We have but scratched the surface in speculating upon its employment. Its effect upon the composition and the tactical handling of armies will be profound.

Modern Maxims

Capt. M. B. Driscoll, O. R. C.

From the Notebook of "General Experience"

A soldier who knows Babe Ruth better than Hannibal is a foul ball.

A great man gets what he wants, because he gives others what they need.

The Supervision of Instruction

MAJ. FREDERICK L. POND, 112th Infantry (Pa. National Guard)

THE World War has made of the Army a great school. We are all of us its instructors. We receive instruction in subject matter and take courses in methods of instruction that we may pass our knowledge on to others most efficiently. Indeed, is it not a fair premise to say that in time of peace the major part of the work of the armed forces is instruction? To this end appropriations are made, to this end all of the organization is accomplished and administered—that men may be instructed to battle proficiency.

The Army has taken from pedagogy the practical points necessary for good teaching. In the various service schools and correspondence courses these points are presented under courses called "Methods of Instruction." There remains, however, a great part of the instructor personnel which has not become acquainted with these courses. And, furthermore, the subject of Supervision of Instruction, as such, seems not to have entered into Army thought of terminology. As this discussion proceeds, it should make apparent the fact that supervision is clearly differentiated from administration, rating, inspection, or "pussyfooting." It has to do with the instruction of instructors and the responsibility for this instruction.

There is a place for supervision. There exists a need for a clear definition of its purpose and a clear understanding of its technique. If it can prevent waste of time in training and therefore prevent waste of money; if it can produce a closer cooperation and understanding in all grades; if it can stimulate the desire for professional spirit and growth, its case is won. And these things supervision can and will do. It has done them in the secondary schools of the country where the situation is so similar as to be almost analogous.

CHOOSING PERSONNEL

The Instructor. Before stating the case for supervision, there is something to be said about the program of instruction itself. Let us begin with the first step and pick out the instructors. Who shall they be? It must be noted that in this discussion the word supervisor means any officer who may be in a supervisory capacity, and the word instructor, any officer in a subordinate capacity.

Psychologists have recognized for a long time the theory of individual differences. Explained briefly, it is that a representative group of individuals will vary in any respect under consideration in a definite way. With respect to height, long noses, shoe sizes —any and all respects—the variability is nearly constant. About seven per cent will be extreme, twenty-four per cent will be above average, thirty-eight per cent will be the great average group, twenty-four per cent will be below average, and seven per cent will be at the lower extreme. Plotted as a curve, the graph resembles the outline of the top of a trench hat.

Alpha tests made in the Army during the World War on over a million men showed this same variation with respect to human intelligence. The

proportions are recognized in educational institutions in awarding grades for work done. And our present army organization is modeled somewhat on this relationship.

In the peace-time company of sixty men, seven per cent, or four (three officers and the first sergeant), are in the highest order. About twenty-four per cent, or fourteen, are noncommissioned officers. The rest are good soldiers, or indifferent, running on down to the rather backward individuals whom it is hard to train for anything.

So the fact is clear that there is inherent in a man's native ability something that concerns his rank. It is questionable that men are born free and equal. There is something—call it intelligence, or the ability to learn, or what not—that is unchangeable and must be considered before all other qualities of leadership in the assignment of rank or grade of the instructor personnel.

The Supervisor. And who shall be the supervisor? By right only he of the broadest experience, finest professional zeal, greatest tact, decisiveness, self-control, kindliness, and ability to impart suggestions so skillfully that they are welcomed, accepted, and enthusiastically used. But who shall find that rare individual? Locating him is like "belling the cat." As the old fable has it, the mice met and decided that it would be a fine idea to tie a bell on the cat so that all would hear his approach and be safe. But who shall "bell the cat"? The answer is, no one. Consequently, longevity furnishes an answer to the question, Who shall be the supervisor? Wasteful as this may sometimes be, it may also sometimes be well for the senior to have an opportunity to produce results.

So there is ever with us the supervisor, or "snoopervisor," whose glaring evidences of weakness are expressed by his nervous irritability, momentary outbursts, bombastic statements, fault finding without constructive criticism, strong feeling about himself, and maudlin twaddle. There is a lot of quackery in the field of supervision. Certain it is that only the quiet, relaxed, easy worker is efficient. And how can one moody person hope to produce anything but chaos in a group perhaps as moody as himself?

THE PSYCHOLOGY OF LEARNING

Having picked the instructors, having assigned to the other members of the command the tasks for which they are best fitted, and having accepted the supervisors assigned by Act of Congress, let us consider briefly what goes on during the learning process.

Education of any kind consists fundamentally of the establishment in individuals of the proper mechanism by which nerve stimuli are transferred into muscular responses. Some of these stimulus-response bonds are present at birth, the heritage of the race, and are called instincts. Some are automatic functions without thought, and are called reflexes, such as breathing, blinking the eye, or shivering. On the other hand, a new experience may be made to produce a reflex action by its association with the original stimulus. These acquired reactions are grafted upon native or instinctive reactions and are called conditioned reflexes. The establishment of these conditioned reflexes is education. It reveals its effectiveness in habits of action and conduct.

When a recruit first attempts to execute right shoulder arms at the stimulus of the command, many mus-

cular responses suggest themselves to him. The rifle may go to the wrong shoulder or be upside down. Finally, by trial and error, and following the sensation of pleasure produced by his success and the approval of the instructor, definite stimulus-response bonds are established and strengthened so that the movement is executed expeditiously and repeatedly almost without thought. This trial and error method is learning on the animal level.

There is another type of learning—kinesthesis, or muscular memory. This gift, for such it is, is present only in the young. It is then that skill in sport is developed. Here is the value of demonstration in the instructional program, the reason that demonstration should precede explanation and application in that part of method called altogether-presentation.

But learning on the human level is largely from ideas. The attention, interest, and cooperation of those instructed must be gained. The personal value of the subject must be shown. Frequent contacts must be made between those instructed and the subject itself. The individuals in the group must have a favorable emotional reaction to the work as a whole; in other words, appreciation must be established. Forced activity is valueless. Authority by itself is likewise valueless. A group may be perfectly disciplined without being instructed. Discipline must develop the love of right and the desire for achievement rather than the fear of correction. Under proper conditions, the obtaining of knowledge is delightful. The instructor must learn motivation, that is, the use of powerful incentives in arousing interest, loyalty, and pride of accomplishment.

PURPOSE OF SUPERVISION

Now that the command has been organized for instruction purposes and the learning process has been briefly considered, there remains for presentation a definition of the purpose of the proposed supervision and a description of its technique.

In the first place, the purpose of supervision is the improvement of instruction. There is no instructor who cannot do better work under the influence of a supervisor who gives to him the benefit of his own broader knowledge and his greater experience. There is a real need for carrying out the principles of the approved methods of instruction—preparation, presentation, application, and testing. A supervisor who is skilled in the proper methods can readily impart them to others. The instruction of the various units must be coordinated and brought close to a common level of achievement, close to certain standards of excellence. Right procedure must be insured and the habituation of wrong methods guarded against. Tasks must be adjusted to the ability of the learner. Adequate recognition must be given to good instruction and constructive criticism must be imparted for all faulty work, to the end that professional growth may be insured.

Supervision is different from administration in that it has little or no connection with inspection or efficiency rating. To be effective, it must be raised above that level. Its purpose, like that of modern medicine, is preventive rather than corrective, and, like modern surgery, it may be painless as well.

Dr. Harold Rugg of Chicago University, originator of the present Army efficiency report, states that "existing

rating schemes are practically worthless from the standpoint of improvement of instruction." There is too much overlapping in the considerations. Furthermore, a rigid system of inspection and rating has for its end mere conformity, whereas the aim and end of supervision is the development on the part of the instructor of constructive thinking and initiative, of intelligent and masterly self-direction.

TECHNIQUE OF SUPERVISION

A technique is simply an intelligent way of doing anything. Contrary to popular belief, most techniques are simple rather than complicated. The bonds of stimulus and response have become so strengthened that simplification must result. Yet the reason that there is too little supervision is because there is too little ability to supervise. The consideration of a working ethics of supervision should be of value.

A new officer, and occasionally an old one, too, is prone to make common errors—to shrink from responsibilities, to be unconscious of errors, to be unable to analyze and diagnose a situation, to be unable to find and apply a remedy. It is true, no doubt, that he may learn eventually by the method of trial and error if he is not cashiered beforehand, but this is wasteful and therefore expensive. And again he may become the subject of a rigorous inspectorial and rating system which obtains conformity but makes professional growth and initiative impossible. Yet, under proper supervision he will become a man of energy, an officer who knows what to do and does it with imagination and fire.

In the first place, the instructor who is under supervision has a right to have his personality respected. The supervisor must assume that the instructor possesses a professional attitude toward his work. Differences must be of professional, and not of personal, nature. They should be expressed by the term "disagreement" rather than "dislike." It must be constantly borne in mind that the instruction and welfare of the command is the point of discussion, and not the affairs or personality of the instructor. In interviews and conferences the future should be considered more than the past. Yet advantage must be taken of the lessons which past mistakes have taught. The main part of the discussion should be on plans for improvement. The supervisor should never talk down to the instructor, never try to show him his place. On the other hand, he should invite any suggestions which his subordinate has to offer. There should never be a display of wrath, whether real or dramatic, nor of authority unless this is openly flaunted. To seek to influence subordinates by the fear element is to breed a race of cowards. Mrs. Lindbergh says that the reason her son was not afraid to fly the Atlantic was because she had never taught him fear.

Large responsibilities must be detailed to one's subordinates. They in turn must be held responsible for results alone. Their methods, their arrangement of minor details are their own. If results are unsatisfactory, different procedure must then be mutually arrived at. Mr. Carnegie attributed much of his success to the fact that he never chose any but intelligent young men for executive positions and then never offered them anything but suggestions.

Through a common understanding of aims and purposes, through common points of view, suspicion and misapprehension must be removed and the foundation for cooperative effort established. Under proper procedure, it will be maintained. The supervisor must offer encouragement through commendation of good features and appreciative criticism of doubtful ones. Defects should be corrected by suggesting different procedure. On the other hand, the imposition of opinions and fiats, the wisdom of which is not understood by the instructor, cannot fail to stultify professional growth. Fault finding without constructive criticism is deadening to initiative.

The supervisor should not fail occasionally to take the situation in hand and demonstrate correct procedure. This principle is well illustrated by the example of the commanding general of a division who held his famous sessions of close order drill in the training for the World War.

The supervisor should not fail to establish a definite routine policy which is considered as fixed by all concerned. Constantly changing policies produce nothing but confusion.

In observation of work, there must be the optimism which first accords adequate recognition to the good, and then recognizes the doubtful and unsatisfactory—kindliness of tone suggesting improvement, yet no softness nor unwillingness in quickly condemning what needs condemnation nor absence of a strong vocabulary for use when necessary. This is the supervior's working ethics.

All proceedings commend themselves to one as wise, doubtful, or unwise. The good must be commended, the doubtful questioned, and the unwise condemned and, it must be added, better suggested.

The supervisor should have a rating system which has some instructional value. Dr. Rugg has devised such a scale under five simple heads, a. skill in teaching, b. skill in management, c. team work qualities, d. qualities of growth, and last, e. personal and social qualities. Definite questions are asked under each heading. Furthermore, the instructor rates himself, and then he is rated by his supervisor entirely without any subjective personal bias. A conference must then be held on all differences of opinion. This method develops self analysis on the part of the instructor and reveals to him the real significance of his work. After all, it is only he who can improve himself.

In conclusion we may say that supervision in education and other great cooperative enterprises has passed through three stages, from the rudimentary to the mechanical, and finally to the professional. In the Army, we seem to be passing from the first stage to the second, from the rudimentary to the mechanical. Is there not a need in this great organization of buck passers for a recognized cooperative responsibility and an ethics of supervision in the accomplishment of tasks, the training of instructors, the achievement of the Army's aims in general? Here in fact is but the manifestation of those three excellent qualities of leadership —kindness, firmness, and justice— which we are admonished to use to the end that all may be kept continually awakened to the true significance of the work and know the joy of the most interesting of all professions.

"Refreshing" at the Infantry School

LIEUT. COL. BERNARD LENTZ, 3d Infantry

IT would take a Charles Dickens, speaking in the character of Samuel Pickwick, Esq., to express adequately the satisfaction that I recently experienced while attending the Refresher Course at the Infantry School.

I was one of a group of fifteen officers selected to take the course. None of us had ever been to Benning. No doubt we all needed "refreshing." We were doubly eligible to take the course.

Although some of us arrived in Columbus late on a rainy night, a friendly staff officer, with suitable transportation, was at hand to meet and greet us. On arriving in the post we found that everything had been prepared for our coming. The officer stayed with us until it was certain that we lacked nothing in the way of creature comforts and that we would not get lost in the big place. Before the end of the first day we felt absolutely at home.

Since the Pickwickian satisfaction continued as the course proceeded, I decided to "research" as well as "refresh" during my stay at the School. This is the result of my research.

I concerned myself not so much with *what* the School has to present by way of military education as *how* it offers such education.

We were soon impressed with the ability of the instructors. They knew their subjects and they knew how to teach them. I do not recall any instructor who might be likened to the professor who could go down deeper, stay down longer, and come up drier than any other man. To us who had met some "deep" ones in schools we had attended at various times this was a welcome form of "refreshing."

In one of the lectures early in the course the instructor brought out the point that authority operates vertically and cooperation laterally. We have heard much of cooperation in recent years, and so this statement interested me. It was not long until I began to see that Benning practices what it preaches. As far as I could see, authority was hardly perceptible but cooperation was plainly in evidence. The spirit of wanting to do rather than having to do was everywhere apparent.

No one doubts that the officers who are retained as instructors are carefully selected, but more than a careful selection of officers is needed to bring about the happy situation that I found.

The efficiency in evidence was not so much efficiency according to rule as efficiency according to common sense. There seemed to exist a general understanding that there is more to life than just efficiency; that an army which is only efficient never has won and certainly never will win battles. Benning I found to be more than efficient. Benning is human. The result is the revival of a good deal of the charm that went with army life years ago—without loss of real efficiency.

A mistake that is at times made, not only in the service but everywhere else, is to confuse activity with effectiveness. As some one has put it, we confuse "busyness" with "business," and the result is a three-ring circus of simulated activity, un-coordinated. I did not see a single circus of this kind during my four weeks at the Infantry School.

Some time ago I heard a definition of "loyalty," attributed to an officer of considerable rank, as follows: "Loyalty—unquestioning agreement with the opinions of the superior." I found this kind of loyalty entirely absent at Benning. Agreement to disagree at times on questions of military education, regardless of rank, and an attitude of tolerance of ideas which encourages open and free discussion, were points that members of the Refresher Class noted with pleasure. To my mind, they stamp the Infantry School as an institution of learning of the first rank.

The members of the instructional staff at Benning are not afraid to be right too soon. There appears to be no application of the thought expressed by Aldous Huxley: "Ye shall know the truth and the truth shall make you mad." I think all this pleased the members of the Refresher Class. I know it pleased me.

At the Infantry School the "War is over." What I mean is that the authorities expect just a reasonable day's work from everybody, and because of this attitude of reasonableness they get a good day's work. It's good psychology. When it comes to deciding on a day's work in the class room or on the demonstration grounds, they apparently reason along the lines of the character in Anatole France's "Revolt of the Angels," who said, "It is better to understand a few things than to misunderstand many." Proceeding in this manner, the authorities get loyalty everywhere, discipline that is in the main self-discipline, and morale that is not the product of multifarious activities of morale officers but something that comes about naturally and logically because conditions are right. The "War" has officially been "over" for a decade. Benning is one place where they know it.

It was interesting to me to find considerable evidence of the practical application of the principle of decentralization. Decentralization is one of those words used profusely in many texts; a word much used in theorizing but often misused when applied to situations as we find them in actual practice. It is so hard to let go of authority and responsibility. Can it be that this is so because the element of fear as a motivating force is still too prevalent? Fear, that the assistant will not do the job just the way we think it ought to be done unless we stand over him? Fear, that if we don't stand over him that some one above us will judge us as inefficient and will grade us accordingly on the annual efficiency report? On this subject, Mr. John L. Mahin, one of the outstanding American advertising men, has said this: "No man will ever be a big executive who feels that he must either openly or under cover follow up every order he gives and see that it is done—nor will he ever develop a capable assistant."

I think I am expressing the Infantry School's belief when I say that since we are living more and more in a motor age we are being compelled, because of the increasing intricacy of our machines of war, to train everybody to assume all kinds of responsibility; and that, to develop the kind of responsibility needed, we must not only pass responsibility down to our subordinates but must not take it away again by standing by, ever ready to jump in when there is the least divergence from our notion of the way the task should be performed.

And while we are on the subject of

motors and machines, how important the human element becomes in our training! One Benning instructor, while lecturing to us, voiced the opinion that he thought it would be well if we could teach sociology in some of our service schools. I do not know that his idea has any considerable backing as yet, but when we stop to think that sociology is taught in every worth-while civil institution of higher learning we must admit that the idea is worth thinking about. The pacifists have used sociology for quite some time. Maybe we, too, can find good in it. It might turn out to be like the use of the ten commandments in business that a priest told me about. He said that some years ago he was present at a luncheon. By his side sat a successful but self-made business man. At one point in the talk which followed the meal the speaker advocated the use of the ten commandments in business. The business man turned to the priest and whispered: "What are these ten commandments? If they are so good I'll use them in my factory."

The point I want to make is that at Benning they are thinking seriously about matters, old and new, that may find application in our Army of the future. They are not afraid to look outside the field of what is generally considered military education for ideas to help in solving the problems of national defense.

I left Benning with the conviction that the Infantry School is in accord with the views of a prominent educator as given in an article on "Education, Old and New," published in the *Century* some years ago. To quote, "The policy of forcing knowledge down the student's throat by the bucketful finds less and less favor with the progressive educationist. What we demand is capacity to acquire knowledge, to handle it, to organize it, to use it. That this result is not by any means assured by the mere possession of vicariously acquired knowledge has long since been discerned by the common sense of mankind. Therefore, the new education emphasizes methods and attitudes with reference to the acquisition and handling of knowledge rather than just so much of it acquired during a certain period."

I hope I have given some idea of *how* they do things at Benning. With the detail of the courses at the School this article has no concern. It is merely an attempt to picture the woods; not the individual trees.

It may be true that Benning still preaches better than it practices, but where is there to be found an institution of learning or any other class of institution that doesn't? And is this not after all a sound procedure? An eminent divine speaking on this subject once told me, "He is indeed a poor preacher who does not preach better than he practices."

To those older officers who have never been to Benning, I recommend the Refresher Course. They will get an excellent idea of what to expect of the younger officers who have taken the complete courses. They will take away knowledge of practical value in their every-day work; they will, more than likely, come away with new "slants" on the philosophy of military education and training; and with it all they will experience four weeks of Pickwickian delight on the Banks of the Upatoi.

Truly, the Refresher Course at the Infantry School is refreshing.

Brains Plus Motors

CAPT. ELBRIDGE COLBY, Infantry

Mechanization—is it to take us along the road of military progress, or are we to take it? If the former, where will it take us? If the latter, where will we take it? The author presents some definite ideas in answer to these questions.—EDITOR.

DURING 1929 Lieutenant Colonel Thomlinson had in the INFANTRY JOURNAL, under the title "Motors for Muscles"[1] a comprehensive survey of what has been done in the past ten years toward the improvement of transportation for the Doughboys. He told of the progress of thought in the office of the Chief of Infantry and of the vehicles subjected to test by the Infantry Board and the Department of Experiment. He brought the narrative up to but did not include the latest high-speed tank which has been found satisfactory since his article was written. Reading his article and noting the step-by-step advance, one very naturally wonders: "What is the next step?"

After more than a year of study and thought it was my privilege to discuss this problem with two excellent cavalrymen, one of whom has since developed a new armored car intended to replace the LaSalle vehicles which we saw at Meade in the summer of 1928. The crux of our argument centered about a line of approach, about "the next step."

One contention was that the mechanized movement is too purely mechanical, that we must work out our tactical requirements and then devise the machine that will fulfill those requirements. The opposing contention was that we must see what we can do and then make our tactics conform to the capabilities and limitations of our machines. Needless to say, I have been reading Fuller and Hart; yet I hope that my thinking is straightforward, and not mere repetition.

This thinking has brought me to the conclusion that the first contention is correct, that we must begin with theory and end with practice. Of course our theory must be governed somewhat by conditions; it must at first be an hypothesis based upon a few facts, an hypothesis later to be checked against further facts.

The opposite method of approach may take us down the wrong road; it may result in many trick instruments and machines, but it will almost certainly result in much wasted effort.

This opposite method, of making our tactics after we have devised our machines, is a perfectly natural one for military men. It conforms closely to our normal attitude. It is ingrained in our habits by school instruction. At the service schools the instructors present a weapon to the classes. They show its construction and method of operation. They set forth its tactical capabilities and limitations. And then they practice their students in tactical use of the weapon within those limits. Now this is very sound and correct as far as instruction goes. It fits in closely with the dictum of von der Goltz that the art of war consists in using the means at hand for the end in view. It is

[1] Page 124, INFANTRY JOURNAL for February, 1929.

necessary that officers should not expect a one-pounder to do the work of a Stokes, should not ask a seventy-five to engage targets beyond its effective range, should not expect a regimental radio set to communicate with the division set, should not demand the impossible from the tools that they have. But the work at the schools is instruction. It has to do solely with execution. It has nothing to do with scientific development.

Fuller says:

Tactical demand should precede technical supply. *I want a weapon of such a nature because I want to carry out tactics of such a nature,* and not, *Here is a new weapon; what are its tactics?* should be the guiding rule in change.

The statement is correct. The ballista of the Romans were devised because the need arose to batter down walls; the moving tower was built because it became necessary to overtop defending ramparts. More recently, the trench mortar was improvised as hand grenades were re-improvised, in the World War to provide high angle fire and reach soldiers run to earth; the one-pounder was developed to smash the concentrated fire-power of the machine gun pill box; the tank was produced to ensure advance across barbed wire under intense small arms fire. Bashford Dean produced the "tin hat," not because he found some interesting models in the Metropolitan Museum, but because there was need at the front for protection against concentration of small arms and shrapnel fire. The long range artillery gun was invented to provide greater local security for gunners and to reach back to attack the enemy's vital rear installations. Battleship armor was improved to meet a tactical need; better projectiles were made to pierce the armor. It is so long since the conflict between armor and gun was in full blast that we have forgotten that it illustrated a vital principle of military science—the principle of Colonel Fuller's passage that tactical demand precedes technical supply.

How then shall we fit this principle to the problem of mechanization and motorization? It appears at first glance to be perfectly plausible to argue that we have passed the initial stage in armored movement so far that we already know what we want. It might be possible to say that it was long ago decided that we need tactically a fast-moving, well-protected vehicle capable of effective close-range fire-power, to say that theory has declared in favor of a rapid cross-country tank, and that we can now get down to technical supply. But this would be very elementary and primitive logic. As well say that all an air corps needs is a plane, all a navy needs is a ship. Our problem is far more complicated than that. We are never going to effect progress if we continue field exercises with dilapidated trucks and antiquated tanks, if we continue maneuvering at Fort Meade all summer and making motorized movements to Gettysburg and Marlboro to learn only that worn out vehicles are actually worn out. We learn nothing about march discipline and road space when road regulations and traffic control require the adoption of exceptional distances between units and elements.

We must think first in terms of tactics. The decisive thrust must be made in strength at the decisive moment. The Germans failed to do this with gas at Ypres in 1915. The British failed

to do this with tanks at Cambrai in 1917. They stopped their tactical thought too soon. We must guard against this error with motors and machines today.

Let us assume for a moment that Fuller is correct in his analysis when he says that Alexander illustrated correct tactics with his three classes of troops: protective troops, close combat troops, pursuit troops.

Alexander had his missile-throwing units, he had his heavy phalanx for close combat, his cavalry to annihilate.

We may say that the modern infantryman protects himself with rifle-fire to be able to advance to hand-to-hand fighting to conquer with the bayonet or the threat of the bayonet; but he finds it difficult to pursue. We may say that artillery protects with its rolling barrage, that infantry shatters at close combat, and that cavalry annihilates in pursuit.

But tanks are also a fact. We can have light tanks and heavy tanks. We can have fast tanks and relatively slow tanks. We can have one-man tanks and tanks (or other vehicles) to carry many men. We can have tanks capable of light and rapid firing and we can have tanks capable of heavy and slower fire. We can have tanks whose fire-power, either in personnel or in weapons, is an integral and inseparable part of the machine, and we can have tanks capable of disgorging men like the wooden horse of Menelaus. Gasoline motors and Diesel engines, wheeled drives and caterpillar treads, have reached such a stage of development that we can have pretty nearly anything we want. As far as motorization goes, the land army of today has very nearly reached the situation in which the Navy stands. How many "plane carriers" do we want? How many "destroyers"? How many "cruisers"? How many "capital ships"? How many "mine sweepers"?

We do not know. We have not yet tried to think that way. We used to concentrate men and to say weight of manpower won battles. The trench, the barbed wire entanglement, the efficient field gun, the machine gun, the tank have changed all that. The biggest battalions no longer win battles. It was not rifle strength on the Western Front that really won the war; it was superiority in gas shelling and in tank strength. Superiority in numbers is an outworn shibboleth. It is superiority in weapons, in movement, and in means of protection, combined and coordinated, that rules the battlefield of the future just as it now determines naval power. It is not the number of men in a fleet that counts, it is the effectiveness of that fleet as a striking force.

The "next step" is to translate "capital ship," "destroyer," "submarine," "cruiser," "plane carrier," into basic terms of tactics on land, but we must build a land force, not a mere land copy of a navy at all, but a real land force based upon sound tactics, not upon occasional freaks of inventors.

Fighting seamen have managed to cling pretty closely to first principles. Their thought has been more in conformity with the essence of striking force than has ours, because they have not allowed themselves to be deceived by nonessentials, because naval victory has almost invariably come from naval strength and not so much from accident and from mistake as has land victory, because naval victory has rarely if ever come from mere manpower, but

rather from superiority of weapons and protection.

Some of this analogy may not be exact or true in all circumstances. But it appears consistent when we consider that we are thinking now of armored land forces, of tanks and engines. We are substituting "motors for muscles." We are in a new medium, armored as never before in modern times. We must think anew before we go ahead. We must use our brains before we use our motors. Our vehicles can move across country. We are more free from roads than ever in ages. Save for mountain or river obstacle, we can maneuver right and left across an area not dissimilarly from the way a navy can maneuver about a level ocean. Our entire view has changed or ought to change. It is not impossible that we may be able to take an entirely new view. *Perhaps* the vital importance of lines of communication may vanish altogether and we may think in terms of a "base" as they do in the Navy.

Why say perhaps? Because we have not yet thought this thing through very far. We have merely introduced ourselves to it. But we may at least be thoroughly convinced that just as the compact line of riflemen of the Civil War has given way to the series of mutual supporting groups of the World War, the conventional fronts of current tactics must give way to powerful striking groups of concentrated mechanized and motorized force. The Navy now thinks in terms of speed, fire-power, range, and armor. We must think in those terms, too, instead of everlastingly just waving an unsheathed bayonet and talking about rifle marksmanship as if our only occupation were bear or dragon shooting. From the Navy's terms we can develop a new tactics. To copy navy tactics would be as unintelligent as reverting to the dense phalanx of Greece. We must think this subject through. By thought, discussion, and mutual criticism we may advance.

Retrospect[1]

A condensed review for the busy reader

MAJ. FRANK B. JORDAN, Field Artillery

CEDAR CREEK

IMMEDIATELY after the battle of Winchester, Sheridan found his troops too fatigued for close pursuit of Early. On September 20, however, the pursuit was resumed, and on the 21st Sheridan found Early drawn up in a strongly intrenched position at Fisher's Hill, covering the valley just south of Strasburg. After spending most of the day in reconnaissance, Sheridan decided to attack the Confederates next day.

FISHER'S HILL

On account of the strength of Early's position, Sheridan did not make a serious frontal attack but moved Crook's force in a wide envelopment, and at about 4:00 p. m. the latter launched a sudden attack against the Confederate left rear. The VI and XIX Corps immediately attacked in front in conjunction with Crook, and the entire Confederate line gave way in confusion. The Union forces captured many guns and pushed the pursuit during the night as far as Woodstock. Two cavalry divisions were sent through the Luray Valley to cut off Early's retreat, but Fitzhugh Lee managed to hold them up long enough to let the Confederate forces pass the critical point.

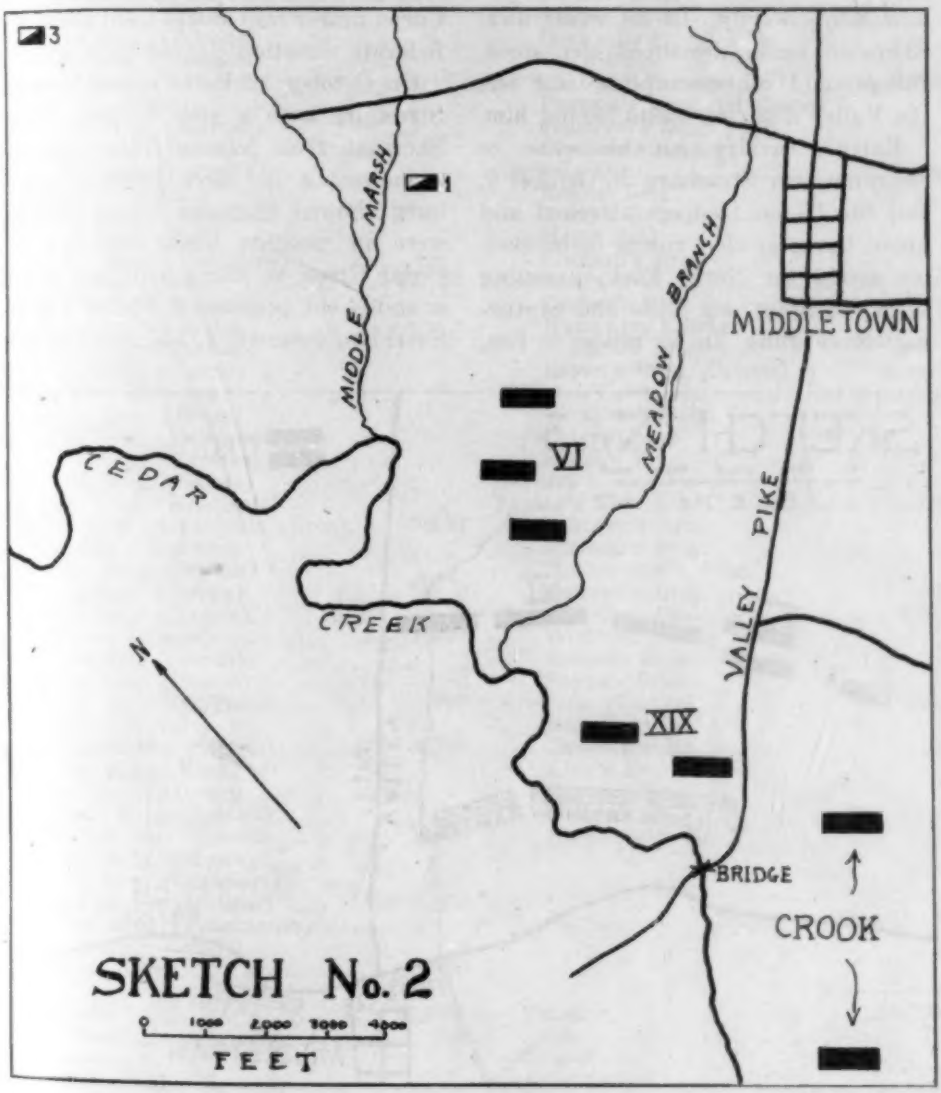
SUBSEQUENT OPERATIONS

Sheridan pursued Early southward without being able to bring him to battle. Lee ordered Kershaw's division back to reinforce Early, who asked for another cavalry division, but there was none available. Just beyond Mt. Jackson, Sheridan cut in behind Early and succeeded in forcing him from the Valley pike in the direction of Port Republic. The latter concentrated at Brown's Gap, where Kershaw joined

[1] The reader is referred to the introduction to the first article of the series, page 238, INFANTRY JOURNAL for September, 1928.

him on September 26 from Swift Run Gap.

Sheridan concentrated in the vicinity of Harrisonburg, with his advanced elements at Mt. Crawford. He sent his cavalry as far south as Staunton, and set about systematically destroying all stores of military value in accordance with his instructions from General Grant. All grain and forage, standing crops, live stock, and various mills were destroyed or carried off, and the Valley from Staunton northward was laid waste. Early's forces were now in the vicinity of Waynesboro, apparently too weak to cope with Sheridan. The Valley seemed to be subdued completely as far as Staunton, so on October 1 Sheridan recommended to Grant that the campaign be considered terminated and that the bulk of his forces be ordered to the Army

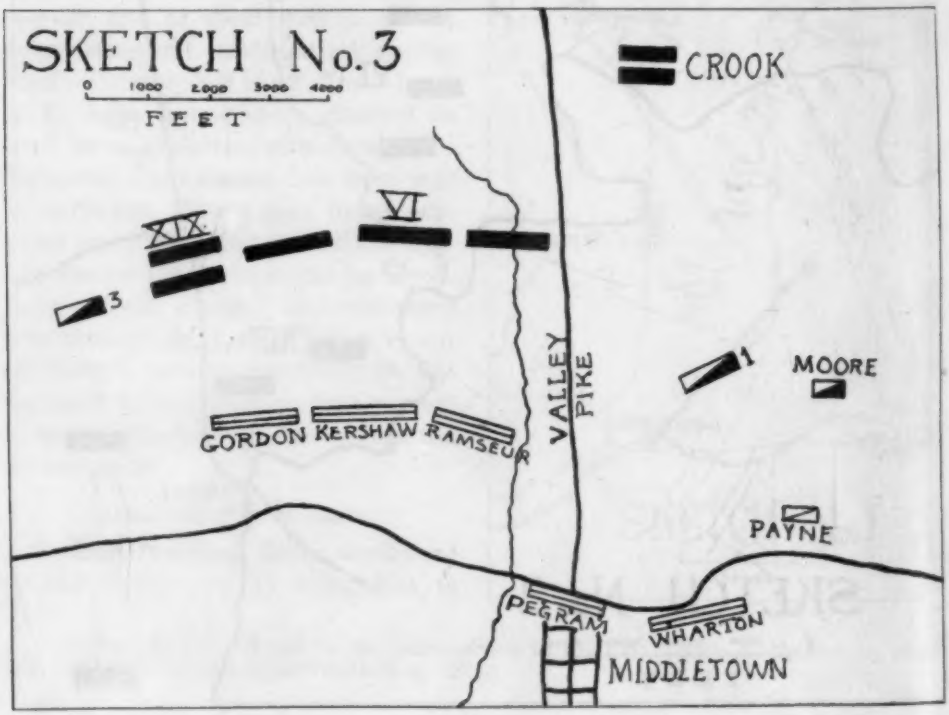


of the Potomac. At this time the opposing forces were situated generally as shown on Sketch No. 1.

On October 3 Grant instructed Sheridan to select a suitable position to hold the Valley, and to send all forces not needed to him at Petersburg. So on the 6th Sheridan commenced his withdrawal northward. Early meanwhile, unknown to Sheridan, had moved to the vicinity of Mt. Crawford, and followed the Union movements warily. In his withdrawal Sheridan again destroyed live stock, forage, and other supplies, and left the Valley a barren waste behind him.

Early's cavalry got too close to Sheridan near Strasburg on October 9, and the Union troopers attacked and drove the gray-clad riders helter-skelter across the North Fork, pursuing them for twenty-six miles and capturing eleven guns. In his report to Lee, Early made sorrowful note of the superiority of numbers and equipment of the Union Cavalry. On October 10 Sheridan halted on the north side of Cedar Creek, starting the VI Corps to Front Royal on its way to join Grant. At this time Sheridan did not seem to be aware of the exact location of Early's infantry, apparently thinking that the cavalry encountered on the 9th was operating independently. However, he decided to hold the VI Corps near Front Royal until the Confederate situation cleared up a little.

On October 12 Early moved toward Strasburg with a view to preventing Sheridan from joining Grant. A reconnaissance in force beyond Strasburg showed that the Union Troops were in position along the line of Cedar Creek, so Early went into camp near his old position at Fisher's Hill. Sheridan, meanwhile, had recalled the



VI Corps from near Front Royal, and now seemed undecided just what to do next. At this juncture Stanton wired Sheridan to come to Washington for a conference if he could leave safely; on the 16th, taking all the cavalry with him, he started for Washington via Front Royal. While at the latter place, he received word from Wright that an attack threatened, so the bulk

BATTLE OF CEDAR CREEK

OPPOSING FORCES

Army of the Shenandoah Maj. Gen. P. H. Sheridan	
General Headquarters	200
VI Corps (Wright)	13,700
1st Div. (Wheaton)	
1st Brig. (Penrose)	
2d Brig. (Hamblin)	
3d Brig. (Edwards)	
2d Div. (Getty)	
1st Brig. (Warner)	
2d Brig. (Grant)	
3d Brig. (Bidwell)	
3d Div. (Keifer)	
1st Brig. (Emerson)	
2d Brig. (Ball)	
Arty. Brig. (Tompkins)	
XIX Corps (Emory)	12,700
1st Div. (McMillan)	
1st Brig. (Davis)	
2d Brig. (Thomas)	
3d Brig. (Currie)	
2d Div. (Grover)	
1st Brig. (Birge)	
2d Brig. (Molineux)	
3d Brig. (Macauley)	
4th Brig. (Shunk)	
Res. Arty. (Bradbury)	
Army of West Virginia (Crook)	7,300
1st Div. (Thoburn)	
1st Brig. (Wildes)	
2d Brig. (Curtis)	
3d Brig. (Harris)	
2d Div. (Hayes)	5,100
1st Brig. (Devol)	
2d Brig. (Coates)	
Arty. Brig. (DuPont)	300
Cavalry (Torbert)	
1st Cav. Div. (Merritt)	4,700
1st Brig. (Kidd)	
2d Brig. (Devin)	
Res. Brig. (Lowell)	
2d Cav. Div. (Powell)	6,500
1st Brig. (Moore)	
2d Brig. (Capehart)	
3d Cav. Div. (Custer)	3,800
1st Brig. (Pennington)	
2d Brig. (Wells)	
Horse Arty.	400
Totals	54,700
Guns	88*

* Estimated.

Army of the Valley Lieut. Gen. J. A. Early	
Ramseur's Div.	3,500
Battle's Brig.	
Grimes' Brig.	
Cook's Brig.	
Cox's Brig.	
Early's Div. (Pegram)	2,100
Pegram's Brig. (Hoffman)	
Johnston's Brig.	
Goodwin's Brig.	
Gordon's Div.	3,200
Evans' Brig.	
Terry's Brig.	
Hays' Brig.	
Stafford's Brig.	
Kershaw's Div.	3,000
Conner's Brig.	
Humphrey's Brig.	
Wofford's Brig.	
Bryan's Brig. (Simms)	
Wharton's Div.	1,600
Wharton's Brig.	
Echols' Brig.	
Smith's Brig.	
Cavalry	
Lomax's Cav. Div.	2,000
Imboden's Brig.	
Johnson's Brig.	
McCausland's Brig.	
Jackson's Brig.	
Rosser's Cav. Div.	3,000
Wickham's Brig.	
Rosser's Brig.	
Payne's Brig.	
Artillery (Carter)	2,300
Braxton's Bn.	
Cutshaw's Bn.	
King's Bn.	
Carter's Bn.	
Nelson's Bn.	
Horse Arty. Bn.	
Totals	20,700*
Guns	70*

* Estimated.

of the cavalry was ordered back to Cedar Creek, and Sheridan continued on to Washington. He lost no time there, and was back in Winchester by the 18th. Meanwhile, however, Early had taken the initiative again. On the evening of the 18th the Union forces were located generally as shown on Sketch No. 2. The Confederates occupied their old lines at Fisher's Hill, about four miles southwest of junction of Cedar Creek and the Shenandoah.

Early planned to operate against the Union left flank, chiefly because the bulk of the enemy's cavalry was on the other flank, but also because the left (south) flank, being difficult of access, would probably not be watched so closely by Sheridan. Gordon, with his own division and those of Pegram and Ramseur, was to make the main attack, moving via the south bank of the North Fork and Bowman's Ford to a position on Crook's left and rear. Kershaw was to move through Strasburg, cross Cedar Creek at Bowman's Mill, and attack Crook in front. Wharton was to move via the Valley Pike to the bridge over Cedar Creek and take advantage of the efforts of Kershaw and Gordon. Rosser with the bulk of the cavalry was to operate along the Back Road and contain the powerful Union cavalry.

Kershaw and Gordon launched the attack promptly at 5:00 a. m. Rosser attacked at about the same time on the Back Road, and this enabled the VI Corps to avoid the surprise that occurred on the south flank. The forces of Crook, attacked almost simultaneously in front and flank, gave way in confusion. The XIX Corps shared the same fate, and the victorious Confederates swept on along the east bank of Cedar Creek. Wharton now crossed over and pushed on up the Valley Pike in rear of Gordon and Kershaw. The latter now encountered the VI Corps drawn up along the north bank of Meadow Branch. Wharton formed on Gordon's right, and after stubborn fighting the Union forces were driven back to a position about two miles north of Middletown, where they were when Sheridan arrived on the field from Winchester.

The Confederate ranks were greatly depleted by numbers of men dropping out to plunder the Union camps, and Early halted to reorganize just north of Middletown. Here he waited from about 1:00 to 4:00 p. m., but without any appreciable result except an increase of the Union strength in his front. Sheridan had been busily rallying his forces with a view to resuming the offensive. The XIX Corps and the forces of Crook were reassembled, and the cavalry was distributed on both flanks. Just before the Union attack was launched the opposing forces were situated generally as shown on Sketch No. 3.

The Union attack was stubbornly contested until the Confederate left gave way, caused, according to Early, by an inordinate fear of being flanked. The withdrawal soon developed into a panic, and it became impossible to stop the men of Gordon, Kershaw, and Ramseur. Pegram and Wharton were forced to conform to the rearward movement, and the Union cavalry, charging home, caused the entire force to degenerate into an unmanageable mob. According to Early's own statement, the "rout was as thorough and disgraceful as ever happened to our Army."

Some of the Confederates paused at Fisher's Hill, but the bulk of the Army of the Valley continued its retreat throughout the night. Most of the transportation and practically all the Confederate artillery was captured, and Sheridan pushed the pursuit so closely that night that Early did not halt until his forces had reached New Market. The Army of the Valley was badly disorganized, and the subsequent operations of a minor nature took place, as Sheridan expressed the situation, "This battle practically ended the campaign in the Shenandoah Valley."

CASUALTIES

Union				*Confederate*			
Unit	*K & W*	*M*	*Total*	*Unit*	*K & W*	*M*	*Total*
Penrose	146	19	165				
Hamblin	324	80	404				
Warner	225	4	229				
Grant	243	41	284				
Bidwell	209	16	225				
Emerson	249	21	270				
Ball	421	15	436				
Davis	514	49	563				
Thomas	331	167	498	Not reported by units			
Birge	180	169	349				
Molineux	190	97	287				
Macauley	107	191	298				
Shunk	226	103	329				
Wildes	37	371	408				
Harris	73	103	176				
Devol	127	8	135				
Coates	55	31	86				
Artillery	183	45	228				
Cavalry	143	43	186				
All others	91	18	109				
Totals	4074	1591	5665	Totals	2700*	1450*	4150*

* Estimated; very few returns available.

Notes from the Chief of Infantry

Commissioned Personnel, Office Chief of Infantry

Chief of Infantry

MAJ. GEN. STEPHEN O. FUQUA

Executive

COL. LORENZO D. GASSER

Section I—Personnel
COL. C. C. ALLEN
MAJ. E. F. RICE
MAJ. L. S. HOBBS

Section II—Intelligence
MAJ. T. B. CATRON
MAJ. S. J. CHAMBERLIN

Section III—Training and Inspection
LIEUT. COL. E. J. MORAN
MAJ. B. MAGRUDER
MAJ. C. H. BONESTEEL
CAPT. W. G. LAYMAN

Section IV—Arms and Equipment
LIEUT. COL. E. BUTCHER
MAJ. T. LAWRENCE
MAJ. J. D. PATCH
MAJ. H. TERRELL

Section V—Mobilization and Organization
COL. F. W. BUGBEE
CAPT. P. E. LEIBER

Reorganization of the Infantry Battalion

THE reports covering the study and experiment connected with the reorganization of the Infantry war strength battalion, conducted at Fort Benning, Georgia, during the last few months, have been submitted by the Infantry Board, studied by the Chief of Infantry, and forwarded with his recommendations to the War Department. It is probable that the results of this study and experiment will be announced in the near future.

The studies on this project have been conducted under unusually favorable conditions. Heretofore, changes in organizations have been decided primarily from theoretical studies based essentially upon opinions of officers of recognized qualifications. The resulting decisions have often been compromises. In the present instance, however, it was possible to make practical tests of all parts of the organization project, and at the same time to take cognizance of the opinions of officers, expressed since the World War. The services of a regiment (29th Infantry) which is constantly engaged in war strength demonstration work were available. The terrain was admirably adapted for all kinds of infantry field work. The experiments were conducted at the Infantry School, where every aspect of Infantry activity is constantly under study, and where officers fully conversant with

our own latest developments and the developments of foreign countries were on hand as advisors. And, further, the experiments and studies were under the supervision of the Infantry Board, whose members are trained in conducting Allied investigations.

From a number of comments which have been received it appears that the basis of study is not thoroughly understood in all quarters. The controlling factor of this study was to determine a combination of fire units of maximum fire-power which will produce, *by using existing weapons,* the most powerful fighting unit. This was to be done by increasing the number of automatic weapons rather than by increasing the number of riflemen. Increased road space was not to be considered a serious deterrent to the organization which otherwise fulfilled the conditions.

It should be observed that the reorganization was based on existing weapons. It is indeed an attractive study to attempt to design an organization on weapons which we visualize for the future. This, however, is not the practical method. Our war strength organization at any time should be based on the weapons with which we can enter combat at the time.

Ⓘ

Policy for Special Service Schools

THE Chief of Infantry has recently announced the policy for selecting Infantry officers for recommendation to attend the Special Service Schools for the 1930-31 course.

The policy differs from previous ones chiefly as concerns the Infantry School. The previous requirement which prevented lieutenants with dependents from attending the Infantry School unless they drew at least $80.00 commutation of quarters is modified so as to require applicants of less than ten years' service, who have dependents, to certify that they can meet the expenses which are involved in attending the school. (See par. (2) (d) below.) The previous requirement that officers selected for the Advanced Course must be eligible to go to the Command and General Staff School no longer exists. Officers with eleven or more years' service are now eligible to attend this course. The allotment of officers for the Company Officers' Course is increased from about eighty to about one hundred and forty-five, and the Advanced Course is decreased from about eighty to about fifty.

The policy, which has been forwarded to corps area commanders for distribution within their commands, is quoted in full below.

I. The following policy governing the selection of Infantry officers for recommendation to attend Special Service Schools, 1930-31 courses, is adopted by the Chief of Infantry:

(a) *Educational policy.*

(1) All officers of Infantry upon appointment shall be sent to commands where they will receive their basic training. The period of initial service with an organization will normally be at least three years. Departure from this principle is authorized when the special service

school quota can not be filled by officers of more than three years' service because of the insufficient allowance of junior married lieutenants for commutation of quarters; in such cases quotas for Company Officers' Course may be filled from recently appointed second lieutenants.

(2) As soon as practicable after completing the basic training with an organization, all officers should take the Company Officers' Course.

(3) After completion of the Company Officers' Course, followed by a period of years on other duty, or after completion of eleven years' service all officers should take the Advanced Course.

(4) The foregoing educational policy, in so far as it contemplates the attendance of an officer at two courses at the Special Service School will not, in general, be applied until provisions have been made for the attendance of all available officers at one course.

(b) *Eligibility.*

(1) No Infantry officer will attend the Special Service School until after three years' commissioned service except as provided for under the heading *Educational Policy* above.

(2) Other than in exceptional circumstances, the limiting age for admission to courses at the Special Service School will be fifty years.

(3) Officers of eleven or more years' commissioned service will be considered eligible for the Advanced Course regardless of whether they have graduated from the Company Officers' Course.

(4) Graduates of the Command and General Staff School will be considered eligible for the Advanced Course for very exceptional reasons only.

(5) No officer who has completed the Company Officers' Course shall be selected for the Advanced Course until he shall have served at least three years on other duty.

(c) *Priorities for attendance.*

(1) *Company Officers' Course.*

(a) Eligible officers stationed at the Service School of the branch.

(b) Eligible officers returning from foreign service if the date of return synchronizes with the commencement of the course. If the date of return does not synchronize with the commencement of the course, and the officer requests extension of tour, he may be granted such extension, or he may be assigned to duty at the station of the school.

(c) Eligible officers due for change of station under length of tour of duty policy.

(d) Other eligible officers.

(e) Newly appointed officers (where the quota can not be filled from officers normally available). See *Educational Policy.*

(2) *Advanced Course.*

(a) Eligible officers in order of seniority who have not had a course at the Infantry School or at the Command and General Staff School, subject to the length of tour of duty policy.

(b) Other eligible officers in accordance with the priorities fixed for the Company Officers' Course. No officer who has completed the Company Officers' Course shall be detailed to the Advanced Course so long as there remain available for detail to the course eligible officers who have not had a course at the school.

(c) There will be approximately one hundred and forty-five Infantry officers recommended to attend the Company Officers' Course and approximately fifty to attend the Advanced Course.

(d) To make this information available to pending candidates, there will be prepared annually in the office of the Chief of In-

fantry a statement of living costs at Fort Benning, Georgia, together with a statement of rentals at Columbus, Georgia, which will be furnished corps area commanders coincident with requests for their recommendations for officers to attend the Infantry School.

In every instance where an officer of less than ten years' service is recommended for a course at the Infantry School he will be required to state in writing to the effect that he is familiar with the cost of living conditions incident to his attendance at the Infantry School, and that he will be able to meet the additional expenses involved as indicated above, with the further proviso that such application is approved by the regimental or post commander, together with a statement from the regimental or post commander that in his opinion the officer in question can afford to assume the added financial responsibility.

(3) *The Tank School.*

(a) There will be approximately fifty Infantry officers recommended to attend this course. Selections may be made from all grades, preferably from the grade of lieutenant, and those without dependents.

(b) In addition to qualifying Infantry officers as instructors in tank tactics and technique, and as commanders of tank units, a motor transport course has been incorporated as part of the Tank School course established at Fort George G. Meade, Maryland, for the purpose of training Infantry officers in the maintenance and operation of motor vehicles, as well as to assure that the Infantry may be kept abreast of the development and progress now taking place in motorization.

(4) *The Signal School.*

(a) There will be approximately thirty Infantry officers recommended to attend this course. Selections will be made from first and second lieutenants. Candidates must have had a technical education and must state, in their applications for attendance at the school, that they will not apply within four years after graduation for transfer to any other branch of the Army.

(5) The selection of Infantry officers for recommendation to attend other Special Service Schools will be limited as indicated below:

For the Cavalry School, approximately,	2
For the Field Artillery School, approximately,	4
For the Engineer Corps School, approximately,	0
For the Coast Artillery Corps School, approximately,	0
For the Air Corps Tactical School, approximately,	4
For the Marine Corps School, approximately,	1

These officers will be selected by the Chief of Infantry with a view to their assignment at a later date to duty as instructors at the Infantry School, or for other specific assignment.

(6) For the Chemical Warfare School, approximately, 2.

These officers will be selected by the Chief of Infantry from among those assigned to duty in the vicinity of the station of the school, Edgewood Arsenal, Maryland.

(7) For L'Ecole Superiore de Guerre, approximately, 1.

The officers recommended for this course will be especially selected by the Chief of Infantry. No officer will be recommended who is not a graduate of the Infantry School and of the Command and General Staff School. The attendance of Infantry officers at the Ecole de Guerre is

dependent upon branch allocations made by the War Department.

(8) For the French Tank School, approximately, 2.

These officers will be selected by the Chief of Infantry from graduates of the Tank School with a view to their assignment at a later date to duty as instructors at that school, or for other specific detail.

(9) For civilian educational institutions, approximately, 7.

These officers will be selected by the Chief of Infantry with a view to their assignment at a later date to duty as instructors at the United States Military Academy, The Infantry School, and The Tank School.

II. Application for attendance at these schools must be submitted through regular channels to The Adjutant General of the Army.

(I)

Living Conditions at the Infantry School

ACCOMPANYING the policy of selecting students to the Special Service Schools, a statement of the living and housing conditions was forwarded to corps area commanders for distribution. The statement is here quoted.

I.

(a) All bachelor officers will be quartered on the Post.

(b) All officers with dependents will have to live in Columbus, Georgia (approximately nine miles).

II. A recent survey of the housing conditions at Columbus, Georgia, shows the rental situation to be as follows:

(a) There will be at least twenty houses at thirty to thirty-five dollars rental per month.

(b) There will be at least forty houses at forty-five to fifty dollars rental per month.

(c) Other houses ranging from fifty to ninety dollars rental per month.

Other usual monthly expenses are estimated as follows:

Officers' Club (no initiation fees) dues	$3.00
Athletic and Recreation dues (includes Dramatic Club, athletic tickets)	.20
Incidental expenses (amusements, tobacco, toilet articles, barber, etc.)	15.00
Instructional matter and equipment	1.00
Laundry	8.00
Children's School	2.00
Transportation	10.00
Total miscellaneous expenses, approximately	$39.20

For officers on commutation in Columbus, Georgia, the following should also be considered:

Cook	$25.00
Ice	5.00
Milk	6.00
Commissary	20.00
Post Exchange	50.00
Total	$106.00
	39.20
Complete total	$145.20

Based upon the above figures it is believed lieutenants of over five years' service can live within their pay and allowances by practicing normal economy.

Lieutenants of less than five years'

service, with strict economy can live within their pay and allowances, but for the sake of financial security should figure on exceeding that allowance by approximately twenty-five dollars per month.

III. Each officer, in submitting his written application to attend the Infantry School, must state that he is acquainted with the conditions as set forth above and that he will be able to meet the expenses involved.

IV. Each regimental or post commander must state, by indorsement, on each application, if same is approved, that in his opinion the officer in question can afford to assume the financial responsibility incident to attendance at the Infantry School at Fort Benning, Georgia.

V. These conditions are set forth in order to afford the junior officers of Infantry an opportunity to attend the Infantry School as soon as practicable under existing policies, by removing the requirement which has previously existed, that no Infantry officer with dependents could attend the course at the Infantry School who drew less than eighty dollars per month rental allowance.

This memorandum is in no way to be construed as requiring an officer to assume financial obligations which he cannot properly meet; rather it is continuing the same protective policy for the individual officer, but removing the positive barrier of a definite rental allowance, and making it discretionary (in so far as an application is concerned) for each individual Infantry officer.

(I)

Small Bore Qualification Course

THE recommendations of the Chief of Infantry on establishing a Small Bore Qualification Course (see INFANTRY JOURNAL for March, 1929, page 296) have been approved. It is expected that changes in Training Regulations 150-5 and 150-10 will soon issue, covering the small bore course in detail.

The standard small bore course is designed for instruction of recruits, for use by all organizations as a means of indoor instruction during inclement weather, and as a test of the efficiency of instruction in the preliminary exercises in rifle marksmanship prior to firing on the "A" range.

Advice has been received from the Chief of Ordnance that the targets for use in the small bore course have been manufactured in sufficient quantity for the current target season. They have been distributed to local ordnance officers and are available to infantry organizations on request. These targets have not yet been standardized, since it is desired that they be subjected to a service test for one year prior to standardization. It is probable that organization commanders will be called upon to render reports setting forth the advantages and disadvantages of these targets for the small bore course.

The Chief of Infantry has recently recommended to the Adjutant General that the issue of the changes in training regulations covering the small bore course be expedited in order that organization may use it during the current indoor season.

Miscellaneous Notes

Service Hats.—The Infantry Board has recently completed another test of an emergency substitute service hat. Our present standard hat is made of imported materials. A continuing attempt is under way to find a domestic material which is suitable for this purpose.

The hat recently tested is the best which has been tried out thus far. It is made of felt material and is of domestic manufacture. It was found to be inferior to our present hat in such characteristics as fading, shrinking, and absorbing water.

It was recommended that the experimental hat be considered a substitute for the present issue hat in the event of an emergency, but that research and development be continued with a view to obtaining a more serviceable material.

Rifle Smoke Grenades.—A number of rifle grenades of rod type, filled with H. C. smoke filler, are being furnished the Infantry Board for test as to their utility for infantry use.

It is reported that the grenades can be fired to a distance of about one hundred and sixty yards and will produce a fair volume of white smoke for about fifty-five seconds.

.22 Caliber Rifle with Telescopic Sights.—The Infantry Board has recently completed a test of .22 caliber rifles, Model 1922 M-1, equipped with telescopic sights.

The telescopic sights were found to be much better for fine shooting than the sights with which the standard small bore rifle is equipped. They permit extremely accurate firing under adverse light conditions and reduce eye strain to a minimum.

It was judged, however, that the telescopic sight for the .22 caliber rifle was a refinement in marksmanship which is not necessary or desirable for general training. It was recommended that this device be not adopted.

Antitank Mines.—Instructions have recently issued establishing a requirement for land mines and directing that development of such mines be undertaken.

Light Tank.—The T-1–E-2 tank, which is an improved model of the T-1–E-1 light tank, has recently been delivered to the Tank Board at Fort George G. Meade and is undergoing its service test. It embodies such improvements over the former model as could be made without a complete redesign.

Reviews and Discussion

Military Procedure

Prepared expressly for the citizen soldier

MAJ. GEN. E. G. PEYTON, U. S. Army

Maj. Gen. E. G. Peyton, Georgia National Guard (Colonel, Infantry Regular Army), commands the 30th Division. In a series of Training Memoranda and Training Notes he is explaining Military Procedure to the members of that division. General Peyton is making a special effort to couch these excellent documents in clear and simple language. We are glad to print them as they become available, at the rate of about two a month, because we feel sure that they will prove valuable and interesting to all National Guardsmen and Reserve officers who may read them.—EDITOR.

TRAINING MEMORANDUM

No. 1.

. . .

1. *General Outline of Training.*

a. From the viewpoint of national defense, military training of citizens during peace is designed to facilitate efficient tactical team play on the field of modern battle, where the death-dealing agencies of the enemy create conditions so perturbing to the minds of individuals engaged that peace-time preparations for the ordeal must be made with painstaking care and exactitude. Frequent changes in leadership and personnel of units due to casualties are among the distressing features of these abnormal conditions. Any system of military training that fails to recognize and plan for these contingencies is perfunctory and without real value. Experience has demonstrated that the most effective means for meeting these conditions are to conduct military training with such care and exactitude that habits of proper procedure formed by individuals in the training areas can be relied on to facilitate weapon efficiency, control, esprit, and tactical team play on the modern battlefield.

b. Military training during peace has for its primary object the development in the individual soldier of the highest standards of weapon or technical efficiency. This individual weapon or technical efficiency cannot produce the best results in time of emergency unless it is grouped under and directed by skilled leadership. Control by the leader and habitual acceptance of control by the individual, as facilitated by disciplinary drills and other military requirements, should be emphasized throughout all periods of training, to the end that fire-power in war may be carried forward in a minimum of time through enemy opposition to where its superiority can be imposed upon the enemy. Likewise, the development of unit esprit is an essential attribute of successful train-

ing. It opens the mind for reception of knowledge, offers the best guarantee for its retention, and in war becomes an individual impelling force that insures the carrying forward of firepower. As training in its various phases progresses, the entire commissioned personnel of the division is enjoined to promote among the men, esprit, habits of cheerfulness, the cooperative spirit, courtesy, military bearing, neatness, and sportsmanship.

c. The commander of each unit from squad to division must earn the respect and confidence of those under him by acquiring and demonstrating superior knowledge of the duties of his office. It is manifestly unfair for a leader through lack of zeal to deny his men that chance for preservation of life and limb in battle which reasonable peace-time study and effort on his part will guarantee. Higher unit commanders will strive diligently to promote initiative, develop military character, tactical efficiency, enterprise, and leadership in their officers, noncommissioned officers, and men. Leadership potentialities will be especially studied and developed and those possessing such attributes will be trained in the exercise of higher command and to impart efficiently the knowledge they gain, to the end that, in the emergency demanding it, the division may expand to war strength with least diminution of efficiency.

d. To facilitate the mobility of the division as a whole and to insure superior tactical team play on the field of battle, rapid and unfailing communication must be provided. Officers and men charged with missions of providing communications will be impressed with the grave responsibility developing upon them, to the end that the training of their units will guarantee communications so reliable that coordination of effort in battle of all units of the division will be of easy accomplishment.

2. *Mission.* By carefully observing the scheme of training outlined in (1) above, the missions of the division are of easy accomplishment. They are:

(1) To maintain every unit in condition to function at existing strength and state of training, when employed in minor emergencies by the State or Federal authorities.

(2) To provide for rapid expansion to war strength on mobilization, and with minimum delay, to become an effective component of the Army of the United States in war.

3. *General Subdivisions of Time.* The armory drill period, comprising the time between two consecutive field training periods, will be devoted to developing in officers and men a high cooperative spirit and enthusiasm that will facilitate instruction in subjects hereinafter listed, and to forming habits of team play and acceptance of control as outlined in 1 above.

The field training period, fifteen days to be announced later, will follow immediately after the armory drill period and will be devoted to rounding out and improving the knowledge gained during the armory drill period, in such manner as will insure team play in technique and tactical use of arms and services, control as measured by the highest standards of accuracy in drills of precision, courtesy, etc., combat principles, scouting and patrolling, marching, maneuvering with speed, flexibility and accuracy over

varied terrain, rapid and unfailing communications, coordination in use of auxiliary weapons, instruction in shelter and obstacles, selection occupation and organization of position, conduct of defense and attack.

. . .

(Paragraph 4 lists subjects to be covered during the armory training period of 1929-1930.)

5. *Procurement of Technical Specialists.* To facilitate peace training and to insure rapid war, commanders of Signal Corps units, communication organizations of the other arms, and other units requiring technical specialists should make a special effort to enlist men whose civil occupations qualify them for their special duties. For instance, radio operators may be drawn from members of the American Amateur Radio Relay League; telephone electricians from the American Bell Telephone Company; storage battery electricians from local storage battery service stations.

6. *Facilities for Training.* Inadequacy of facilities rarely constitutes a satisfactory excuse for a neglect of training. The exercise of ingenuity and resourcefulness on the leader's part can be relied upon to overcome deficiencies in training facilities.

7. *Recruit Instruction.* This phase of instruction will be conducted with painstaking care by specially qualified instructors. The necessity for exactitude in drill and other military requirements as outlined in paragraph 1 will be explained with great care to the end that a cooperative spirit may be highly developed. Special care will likewise be exercised that the home represented by the recruit may feel secure in the thought that influences surrounding the young man are always the best.

8. *Schools.* *a.* Officers', noncommissioned officers', and specialists' schools will be conducted weekly in all organizations. When practicable, higher commanders will similarly conduct schools for their staffs. Sessions of school should be so timed that each phase or subject of training may be studied in school before the date for which it is scheduled.

b. The Army correspondence schools . . . are available for officers, noncommissioned officers, and key men of the . . . division. These courses are well planned, interesting, and of great military value. They provide a means of securing for the leader the respect and confidence of subordinates, which greater tactical knowledge guarantees; they better fit the individual taking the courses to assist in or conduct unit schools; and they prepare him likewise for a promotion jump of one or two grades in rank, that may be an early requirement in the next emergency.

. . .

(Paragraph 9 gives instruction about programs and schedules.)

10. *Training Notes.* This training memorandum will be supplemented by notes on training prepared and distributed from time to time by the Division Commander.

TRAINING NOTES

No. 1

FOR STUDY AND FILE WITH TRAINING MEMORANDUM NO. 1—CONTROL

In every phase of American activity, control, in the sense of intelligent direction, plays an important role. In

athletics, control by the coaches and by the field captain, and the acceptance of control by the players are essential to the development of the team play necessary for success. In commercial activities, control by the directing head is essential to the accomplishment of the various business missions. Lack of control or team play in athletics results merely in the loss of the competitions or games. Lack of intelligent direction in business results in financial losses to the firm. Such losses are repairable by reorganization and a reappearance under stronger control. War deals directly with life and death; losses of life due to lack of control are not repairable. Consequently the great value of control in a military organization should be among the first lessons taught.

In a peace-time organization control is usually handed to the officer on a silver plate; it has been acquired by the officer before him and handed down. Unless specially reminded, we are apt to give a minimum of thought to this most important attribute of a military organization. In commercial pursuits, the business manager selects his assistants and subordinates, pays them a wage acceptable to them, which usually enables them to enjoy the comforts and perquisites of a home, offers them advancement for their loyalty and increased efficiency, and perhaps increases their pay as the business returns increase in value. Through satisfaction with pay, contentment with surroundings, and hope of promotion, the business manager has no difficulty in exercising his control. On the other hand, in a national emergency the military officer has an extremely difficult problem. These same citizens, who have worked under the satisfactory conditions just described, are inducted into the military service of the United States. Their pay is reduced to a dollar a day, a tent is substituted for their home, and a battlefield for their place of work. Yet the military officer to whom these and other citizens are allotted for training to fight the nation's battles must overcome these difficulties, not only imbue them with an acceptance of his control and train them to use their weapons effectively, but also inspire them with a determination to work together as a team to accomplish military missions.

The first great requisite in acquiring control is to demonstrate ability to lead by displaying superior military knowledge in a calm, confident, business-like manner. Acceptance of control from such a leader by well fed, thoroughly rested and contented citizen soldiers is of easy accomplishment. But due to enemy activities, soldiers are not always well fed, they are weary from marching, and their normal thinking minds are greatly perturbed by the dread-inspiring incidents of the modern battlefield. It follows, therefore, that the only effective control is that which can be exercised when all conditions are least favorable for acceptance of control on the part of the soldier. Now the question arises, how can we get the kind of control that will endure the tragedies of battle? The answer is simple, but the operation is tedious—*form habits!*

The habit-forming requirements of the military profession are least understood by our nonmilitary friends; but if we keep the habit-forming result in mind, they are easily explained. For instance, the soldier is required to salute his superior officers on all occasions, and you readily see that this

daily and frequent recognition of the commissioned officer becomes a habit, and that this habit of peace-time recognition can be relied upon absolutely on the battlefield to facilitate the officer's control when the soldier's mind is only about fifty or seventy-five per cent efficient. The salute produces in the soldier the habit of recognition of constituted authority, but that authority must likewise further develop acceptance of control until it too becomes a habit. The salute of itself is not considered sufficient to speed up the habit of recognizing the officer competent to exercise control. It is required that the presence of the officer entering a room occupied by enlisted men be further emphasized by the calling of attention, with the requirement that the men rise to attention. Close order drill, when required with accuracy and precision, is likewise a most effective aid in forming habits of control.

There is a normal and natural reluctance on the part of an officer to require this special homage and deference from fellow citizens of our great democracy, but when we realize that habits thus formed insure the citizens fighting under trained leadership as a team and that this offers him the best chance of preserving life and limb at the same time of securing victory, we should spare no effort to take these and other steps so essential to control. There is, too, a perfectly normal and natural reluctance on the part of our citizens to accept the leader's control, but by keen and thoughtful interest in the men, by studious and business-like effort to provide for them comfort, recreation and amusement, the leader soon changes the grudging acceptance of control to a willingness to cooperate. By further development the leader imbues his men with an eagerness to cooperate; but he should not rest content until he has behind him a unit of men determined to cooperate fully at all times in the accomplishment of any mission whatsoever. As your unit takes form as an efficient military organization, pride and esprit put in their appearance, and they must be developed until the men of your unit are possessed of an unconquerable spirit.

In reality everything that is done in training reacts in war to the benefit of the soldier. When the soldiers feel and understand this it shows that the leader's efforts are unselfish. Unselfishness is the key to loyalty, and loyalty is the mainstay of control.

TRAINING NOTES

No. 2.

For Study and File with Training Memorandum No. 1

VALUE OF HABITS FORMED IN TRAINING

It was brought out in the letter on control that the habit formed in peace of recognizing the officer can be relied upon in battle to facilitate that officer's control over men who are excited, perturbed, and most in need of the officer's guidance. Since habits formed in peace can be relied upon to such advantage in war, it should devolve upon the leader to establish firmly in his men as many good habits as possible. To do this the leader must constantly consider the effect in war of every peace-time activity and policy he follows in the training of his unit, and many harmless customs in civil life must, in training for war, be moulded to suit military requirements. For instance, the "kill the umpire" attitude of the American baseball fan

has no place in military athletics, because the umpire represents a constituted authority, which we are striving to habituate the soldier to respect. During the field training period, a week of careful training in control could be nullified at Saturday and Sunday athletic games if utter abandon were permitted. Procedure that is observed for five drill days and broken on the last two days of each week is not and does not become habit. With the cooperation that the tactful, forceful, and resourceful leader is soon to acquire, this official supervision and regulation is easily explained to and followed by his soldier fans and players.

From the morning calisthenic drills during the field training period the habit of erect carriage and soldierly bearing should be started and carried into all activities that follow. As an aid and a reminder, the soldier should be told at the close of the calisthenic drills to study his shadow and to correct swaggering of the shoulders, and otherwise to improve his carriage. You will be amazed how the shadow carries on your calisthenic instruction throughout the day. Each time the soldier steps into his shadow he is reminded of your instructions, and as the cooperative spirit develops, he responds and improves his carriage. At the suggestion of the shadow, the soldier strives to improve his own carriage and the appearance of the unit is improved to a superlative degree when the mass effect of individual effort is thus acquired.

The unit is being trained under your guidance to accomplish missions in war. If individuals of the unit can be encouraged and trained in peace to strive for the accomplishment of individual missions, the mass effort in war will be improved to the highest degree. Ordinary drills for the development of weapon efficiency and unit team play are helpful, but not sufficient to develop in individuals the habit of striving for mission accomplishments. Athletics in every form provide the best facilities for this important individual habit. The urge to accomplish these missions must operate from within the man, and not by order from without. Consequently, the most thoughtful and tactful exercise of initiative is required on the part of the leader to create that urge within each individual man. This appears to be a big undertaking when we think in terms of war strength units, but with the great variety of American sports it would be rare to find native-born Americans who have not already developed a fondness for some athletic activity.

Specifically then, we are to discover the particular aptitude of the individual, and by offering him opportunity to display his specialty or his capacity to acquire distinction among the men of his unit through development and exploitation of his natural talent, we stimulate in him self-respect, pride in organization, and willingness to dare, born of the consciousness that he can do.

The desire to excel in the accomplishment of missions should not be limited to athletics nor to military formations. The determination to do well the job at hand should be carried to civil vocations, where it will undoubtedly react to the advantage of the individual in opportunities for advancement, raises in pay, contentment, and the like. Those traits of character that will insure accurate ac-

complishment of missions in civil life can be relied on to facilitate accomplishment of military missions in battle.

When we thus fill a unit with individuals habituated in striving to accomplish missions, the mass effect towards mission accomplishment is multiplied and the battlefield mission is accomplished earlier, thus clearing the atmosphere of death-dealing agencies at a saving of life and treasure. Hours saved in winning battles will reduce the length of campaign by months; months deleted from an energetic campaign will shorten the war perhaps by years.

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Command Post Exercises

Col. W. K. Naylor, Infantry [1]

THE command post exercises held in New Jersey during July by the II Corps Area, popularly known in this section as *CPX 29*, raises the question as to the advisability of exercises of this kind.

It is understood that a similar exercise will be held next year in another corps area, and before then I believe it proper for protagonists of command post exercises to assert themselves as against antagonists.

To begin with, the participants in the CPX 29, almost without exception, pronounced the exercise most valuable, most realistic, and in every way most successful. We might, at this point, appropriately inject the hackneyed expression that the proof of the puddin' is in the eating of it. The principal charge made against CPX's is that they are unrealistic, that they do not inject true service conditions, and that commanders do not command in the strict sense of the word. While admitting that such conditions do at times arise, that is not the fault of the type of the exercise but the fault of the persons who conduct it.

In the CPX 29 the commanders reconnoitered in front of their positions for a day and one-half, studying the terrain and its possibilities. The directors, who unfortunately did not arrive long enough ahead of D day, only had about two days to ride over the terrain and familiarize themselves with it. The command posts were established just about as they would have been established in actual war. There was no elaborate system of telephones and telegraphs, and, while none of our telephones were shot away by hostile fire, we encountered all the difficulty of paucity of telephone communications by reason of the fact that we started fifty per cent short in equipment. There was a realistic feature introduced into the telephone communications for which we claim no credit; some irate natives of New Jersey cut away almost all the wires in one corps.

Whether a CPX deserves the charge "paper war" is up to those who con-

[1] Chief of Staff, II Corps Area.

duct it. In our exercise we prepared a lot of "canned" messages, many based on actual experiences in France, with dates, hours, and places left blank, merely as suggestions for the directors. The directors were to feed these messages in with only sufficient frequency to keep the exercise moving along. It was not intended that all of them should be sent, or any of them; they were merely suggestive. Unfortunately, in an instance or two the directors allowed too many messages to come in, so in those cases we were open to the criticism of "too many messages."

The army commander inspected all the command posts and, together with many of the commanders, reconnoitered the front lines and the enemy's territory in an airplane.

I personally visited nearly all the command posts, and the thing that impressed me the most was the fact that the commanders were not sitting around smoking their pipes and with their feet on the desks.

Be it understood that a command post exercise is not an exercise in technique and tactics of smaller units, nor is it a substitute therefor; rather it is an addition thereto. If a commander does not know the powers and limitations of an infantry platoon and battalion, of a battery of field artillery, or of a machine gun platoon, and the like, he has no business taking part in a CPX of this kind.

A great many people seem to think that in order to get the superlative of instruction the troops must be actually there. Of course we understand that it would be highly impossible to assemble a war-time field army of two corps in New Jersey or anywhere else in peace-time, but even if we could I am not so sure that the command features would not become very seriously compromised by those of administration and the like. This is exactly what happened at the Manassas maneuvers in 1904, where two corps were assembled.

Even though all the troops are imaginary, a commanding general who has any sort of an imagination, can, from his post of observation, glean just about as much by viewing the ground through his glasses or with naked eye as he could if the troops were actually there. Besides, if the troops are acting properly he would not see many of them anyway. I recall being on the hill directly back of Mort Homme when the division of which I was chief of staff "kicked off" in the Meuse Argonne. The thing that impressed me the most as the morning progressed and the atmosphere cleared up, was the few troops I could see, and yet within the range of my vision I dare say there were thousands of men.

The CPX's that divisions in France held before they went into the line, insofar as they applied to the 33d Division, were most beneficial. And I say without expectation of contradiction that the success of that division was due to the serious-minded way in which we carried out those exercises, known in those days as division liaison problems.

As I read such extracts from Mr. Thomas M. Johnson's book, "Without Censor," as "The 33d Division had maneuvered perfectly on the Meuse," I think of when we were in the British training area and some people were

"knocking" command post exercises. Thank God that he did not succumb to their influence.

I have attended probably as many maneuvers and exercises as any other officer of my service in the Army, and I want to take this occasion to subscribe most heartily to all *properly conducted command post exercises,* of which CPX 29 was one.

Unless I have been grossly misinformed or have read history incorrectly, the divisions in France succeeded in the same measure as they took these command post exercises seriously—I mean those that they carried out before they went into the line. Maybe I am wrong in the general statement, but it is true of the command of the 33d American Division.

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Ounces

LIEUT. B. M. MCFADYEN, Infantry

ACT I.

TIME: 10:51 a. m.

Place: On the right of the road.

Cast: Four privates (and others necessary to the march).

First Private: "Gee, this load's getting heavy."

Second Private: "Take it off."

Third Private: (Turns and looks at First Private, who slips out of the suspenders, drops the pack, reclines on it, tilts his hat over his eyes, and sighs) "Wonder where we gonna stop for lunch?"

Second Private: (Grunts).

First Private: "You know, I'm going to invent something to do away with all this weight. It's wearing me down."

Third Private: "While you're doing it, invent some way to keep that darn cup from burning my mouth every time I drink hot coffee."

Second Private: (He starts to grunt, but thinks better of it. Too much effort).

Third Private: "You know, if we had a uniform like the unionalls that mechanics wear we wouldn't have to wear breeches and leggins and shirts. I bet it would be lighter." (Lost in the throes of invention) "And I'd have little pockets around the waist for the cartridges. Talk about a built-in cabinet! No more cartridge belt."

Second Private: "Better invent a way of keeping that cup handle fastened so you won't drop hot coffee on me again."

Fourth Private: "You birds shut up and fall in."

Curtain

ACT II.

Time: 11:15 a. m.

Place: Three-quarters of a mile down the road.

Cast: The same, augmented by a dog.

Unidentified Voice: "Lift up your feet."

First Private: "Who's that back there hollering?"

Unidentified Voice: "Lift up your feet. You got lead in them shoes?"

Third Private: (Ponders to himself) "You know, I bet we could have lighter shoes. I bet they could use lighter nails or something. Cut off maybe an ounce."

Second Private: "What's an ounce? You wouldn't know it was cut off."

First Private: "All right, but if they cut an ounce off everything we got I bet it would cut a whole lots off this pack."

Second Private: "Listen, bird. That pack is made for strong backs and weak minds like you got. Lift up your feet."

Third Private: (To himself) "And two leggins is twelve, and one breeches is thirteen, and two shoes is fifteen." (Out loud) "Look here. I already cut a pound off."

First Private: (Stops in his excitement, but is helped forward by rear assistance).

Unidentified Voice: "Get up there and keep that muzzle up. You nearly stuck it in my eye."

First Private: "You know, if they'd make them pup tents out of balloon silk I bet they could cut off some weight, and they'd be littler, too."

Unidentified Voice: "And make the blankets out of cheese cloth and they'd be littler, too."

Second Private: "If you want something to do, why don't you make them meat can lids deep enough to hold some rations?"

Unidentified Voice: "Lift up your feet."

Third Private: "You know, if they'd make that unionall suit of mine waterproof we could throw away these raincoats."

Second Private: "I got a picture of you going to town wearing that stuff."

Third Private: "Aw shut up. You know I mean to wear it for field work."

From the Column: (Loud shouts and laughter).

Curtain

ACT III.

Time: 12:21 p. m., the same day.

Place: Under a tree, noonday halt.

Cast: Same.

Third Private: "Say, fella, what's that mobility stuff they're handing out?"

First Private: "You know, when I was orderly to the old man I heard 'em talking about it. Trying to make us move faster or something."

Third Private: "Huh! The way I'm anchored down with this load it'd take a battleship to get me out of a walk."

Second Private: (He moves his head slightly and places his hat over his face) "You birds quit waking me up. If you're so good cutting out them ounces why don't you get a patent on that water-proof unionall that's got a built-in cabinet for cartridges?"

Third Private: "Think you're smart, huh? You ain't never seen no race horse carrying a pack."

First Private: "You know, I bet if they made that shelter half out of balloon silk and cut out a whole lots of this pack, I bet we could hop around like they want."

Third Private: "Look at them football teams. I saw in the paper where they even made the breeches out of balloon silk or something else like it. Cuts down weight. They run faster."

Second Private: "You don't need no balloon silk breeches. What you need is a balloon if you're going to move fast. Gimme a cigarette."

First Private: (Mechanically hands a pack to both privates and lights one himself) "You know, if we had a car now we could be back in camp in fifteen minutes."

Second Private: "You'll be there in fifteen minutes, all right, plus three hours."

Third Private: "That paper said that seventy thousand people saw a football game. Bet they didn't walk. Bet they rode in cars."

Second Private: "What's on your mind? You want to ride on a hike and not carry no pack when you get there?"

Unidentified Voice: (Sarcastically) "He wants to get there faster so he can work longer and not have no pack so he can work harder."

First Private: "That's all right. Bet it wouldn't take so many of us then. The rest of us could rest."

Curtain.

Modern Maxims

Capt. M. B. Driscoll, O. R. C.

Hot air is like water—it always seeks its level.

An army can fight on beans, but it flounders on "boloney."

Bright buttons do not always indicate bright minds.

Many a man in a million dollar riding outfit does a five cent ride.

When golf takes all of an army's time, it will soon be in the hole.

Foreign service may be irksome, but serving a foreigner would be more so.

Some of the largest gas stations dispense their product free.

Antiaircraft Training in 35th Infantry

DETAILED study of and intensive training in antiaircraft defense began in the 35th Infantry in January of 1928, when a training memorandum from Headquarters, Schofield Barracks, called for special attention to be given antiaircraft defense and for a draft of tentative training regulations on this subject.

In conducting training and in formulating tentative training regulations, the following principles were to be considered:

a. Our own pursuit aviation is the best protection against hostile planes.

b. The limitations of aircraft are such that even a considerable superiority in pursuit aviation cannot guarantee ground troops against all hostile air attack.

c. Concealment offers excellent protection against air attack. Fire-power affords protection by keeping hostile aircraft at a distance and by establishing barrages through which aircraft must pass to reach a position from which they can bomb or machine gun ground troops.

d. To obtain concealment supply columns may, when confronted by a strong hostile air force, be forced to operate exclusively at night. Troop columns under similar conditions move at night whenever time permits, but in many situations (and especially on this Island [1]) troops must be able to move both by truck and by marching during daylight.

e. Losses may be reduced by moving in small units, with large intervals or distances. As a rule, however, the avoidance of delay is of more importance than the avoidance of such losses as aircraft are able to inflict.

f. An enemy will seldom be so rich in airplanes as to run great risks in attacks against marching columns. This fact, coupled with the fact that an attack plane must fly low to inflict serious casualties on marching columns, permits reliance on machine gun and rifle fire as effective protection against aircraft.

g. Truck and wagon columns should be provided with machine guns mounted for antiaircraft firing.

h. Efficient observation and brief commands must be provided, to the end that instant fire may be opened.

i. Better results are to be expected from barrage fire than from fire against the plane itself.

At this same time there was also issued to each officer a copy of Provisional Training Regulations, 6th Infantry — Infantry Antiaircraft Defense.

The next step of instructing the officers of the regiment in antiaircraft defense was a series of five lectures delivered by officers of the Air Corps on the following subjects: "Organization of the Air Corps," "Observation Aviation," "Air Force," "Combined Air Force," and "Aerial Attack of Marching Columns and Discussion of Defense."

[1] Oahu.

Instruction in flying to teach officers of ground troops the appearance of formations from the air was given to specially selected field officers and captains who volunteered for this training. The flying time for each officer was approximately one hour. The officers submitted written reports of their observations to division headquarters in person immediately after the flights.

In March of 1928 Division Headquarters issued some very helpful notes that were results of reconnaissances made from time to time by officers of the department.

In August, 1928, Headquarters, 22d Brigade, of which the 35th Infantry is a part, issued a tentative training regulation entitled, "Infantry Protection Against Aircraft." This was made up partly from the tentative regulations submitted by the two regiments of the brigade.

All of the above-mentioned tentative training regulations and information from the Air Corps were followed as closely as possible in all tactical exercises and maneuvers until receipt of Tentative Training Regulations Number 300-5, War Department, November 15, 1928. The doctrines and principles that had been taught in this regiment agreed, in general, with those contained in this publication.

At the present time a group of seventy-two men (one squad from each rifle company) is undergoing antiaircraft combat training as prescribed in Tentative Regulations 300-5.

In 1928 the 35th Infantry won the Machine Gun Antiaircraft Competition of the Hawaiian Department. Especially selected men from each of the three machine gun companies made up the team.

Antiaircraft marksmanship in this regiment has consisted of machine guns firing at diving targets, towed sleeves, and small balloons. This year an additional training feature was added in which teams from each rifle company fired at small balloons. Each team consisted of ten riflemen of various qualifications. For the firing of each group, fifty rounds of ball ammunition were issued and twenty-five rounds were held behind the line and distributed as needed. All groups opened fire from the sitting position at each balloon when it had reached a slant range of about two hundred and fifty yards, and continued at will until the balloon was hit, had passed outside the safety limits, or the seventy-five rounds had been expended.

A comparison of the results of balloon firing with the rifle and the machine gun (as shown in the tabulation below) clearly establishes the efficiency of aimed rifle fire. The two weapons were used under similar conditions and invariably the rifle fire would cause the balloon to burst shortly after it was released, while the machine gun fire in many instances failed to strike the target.

	Balloons used	*Balloons hit*	*Balloons hit %*	*Ammunition used*	*Average no. rounds per balloon hit*
M. G.	216	105	48.61	12,430	118.38
Rifle	132	130	98.49	1,959	15.06

An officer of the 21st Infantry has developed a new antiaircraft mount for machine guns which the infantry regiments in this department are using. It is a two-wheeled trailer similar to the Matthews mount. A board of officers has drawn up a set of drill regulations that prescribes the manner

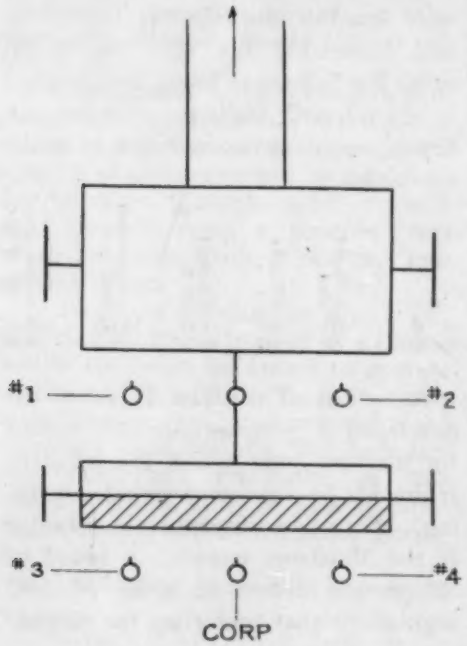
in which this mount and gun will be handled in order to meet air attacks from all directions. A minimum number of men is used to operate the gun, so as to make a smaller target. These regulations are given here as it is believed they will help other organizations in drawing up regulations for the use of similar mounts.

35TH INFANTRY DRILL REGULATIONS FOR ANTIAIRCRAFT MOUNT

1. While on the march and when attack by the enemy is imminent men are around the carts as shown by the diagram.

2. *Action Rear.*—No. 1 grasps the handle of the trail with his right hand. No. 2 grasps the ring of the coupling pin and assists No. 1 in lowering the trail. No. 1 lowers the trail, completes the loading of the gun, and fires.

3. *Action Front.*—Nos. 1 and 2 release and uncouple the cart as in action rear, then they swing the trail one hundred and eighty degrees to the left and assume firing as in action rear.



4. *Action Right.*—Nos. 1 and 2 release and uncouple the gun as in action rear, then they swing the trail ninety degrees to the left and assume firing as in action rear.

5. *Action Left.*—Nos. 1 and 2 release and uncouple the cart as in action rear, then they swing the trail ninety degrees to the right and assume firing position as in action rear.

6. *Positions of Nos. 1, 2, 3, 4, and the Corporal During Firing.*—No. 1 at the gun kneeling on the ground in rear of the trail. No. 2 on the gunner's left kneeling on the ground and in such a position that he can get ammunition for the gun and assist No. 1.

Nos. 3 and 4 will be away from the cart and under cover, but will be on the alert to replace any casualties. The corporal will be at the right wheel observing the fire.

7. *To Change the Direction of the Gun While Firing.*—If the muzzle of the gun is to be turned to the right, beyond that which it is possible to traverse, the corporal and No. 2 turn the gun to the right, using the right wheel as a pivot. If to the left, vice versa. If to the rear, they use the left wheel as a pivot, turning the gun to the right-about.

The commands for the above changes in the direction are as follows:

1. Action. 2. Right.
1. Action. 2. Left.
1. Action. 2. Rear.

8. *Definition of Front.*—While marching, front is the direction of march. While in action, front is the direction in which the gun is pointing.

From a careful study of Tentative Training Regulations No. 300-5, and other information on the subject, and from the results achieved in firing, it is believed that this regiment is pursuing a course of training that will enable it successfully to combat air attacks.

Indoor Close Order Drill

LIEUT. F. M. HARRIS, Infantry

FREQUENTLY one reads or hears that disciplinary drills during winter months are impossible on account of bad weather conditions. I believe that the winters in China are about as severe as anywhere, and I am going to tell of what one company of the 15th Infantry accomplished during winter—indoors.

The results of that winter's work incline me to believe that the finer points of close order drill can be more easily taught indoors than out. In the first place, indoors there are no distractions. Next, in a quiet corner of barracks a squad leader, with the necessity of "sounding off" removed, seems to lose that self-consciousness which ruins an otherwise good instructor. He seems to be less apt to slur over important points; and, on the other hand, the men seem less backward about asking questions. Many a noncommissioned officer who does not "know his stuff" has "gotten by" on the drill field, but indoors his inefficiency sticks out like the proverbial sore thumb.

The key to successful indoor instruction is to cover only a few points each day and to make certain before the instruction begins that each noncommissioned officer not only knows how to execute each of them correctly, but also that he knows just how to pass what he knows on to his men.

The period assigned to close order drill during the months in which outside drill was impossible was from 8:30 to 9:30 a. m. From 8:00 to 8:30 the company took a "walk and run" which thoroughly woke the men up. At 8:30 all noncommissioned officers assembled in the day room. There the officer in charge of instruction took up in detail the two or three movements scheduled, a list of which had been posted on the bulletin board the day before. He rapidly required each noncommissioned officer to execute each movement, using the same method of instruction that he would use with the men. This period did not last longer than ten minutes.

During this time the squads assembled at the place of instruction, pushed bunks against walls, and placed the foot lockers on bunks. Two squads were placed in each of the three squad rooms, the day room being reserved for recruits and men who needed special instruction. At the end of the noncommissioned officer instruction period squad leaders went to work with their squads, and platoon sergeants supervised instruction in their platoons. A section guide was placed in charge of the recruits in the day room. At 9:20 a. m. platoons assembled in the squad rooms and took up the points which had been covered with the squad, and reviewed points previously covered.

The points covered during approximately two months of instruction were as follows:

a. All of Section II, T.R. 50-15.

b. Under Section III, T.R. 50-15:

Quick time (instruction in this was limited to shifting the weight to the right foot and not leaning forward at the preparatory command, and to the first three counts when armed with the rifle);

Mark time—with and without the rifle;
To face in marching—with and without the rifle.

c. All of T.R. 420-20.

d. Under Section I, T.R. 420-50:

To form the squad;
Open and close ranks;
Stack and take arms;
To turn on a fixed pivot.

e. Under Section II, T.R. 420-50:

Same as Section I, and in addition;
Squads right, column right.

In instructing the platoon in turning on a fixed pivot and in executing squads right column right, each man acted as number one or number four in the front rank. In other words, it became a drill of pivot men only. In stepping off after executing either of the above movements, the men were taught to take one step and hold it. This method was also used by the squad leaders in instructing the individual squads.

f. Cadence drill:

The following method of instruction was used: All noncommissioned officers were first taught to give commands on the proper count, as follows:

1. From halt:

Execute squad right and halt—COMMAND,
1. Squad Right, 2. MARCH-1-2-Squad-1-HALT-1-2-1-2-3;
Execute squad right about and halt—COMMAND,
1. Squad Right About, 2. MARCH-1-2-3-4-5-6-7-Squad-1-Halt-1-2-1-2-3;
Execute squad Right—Command,
1. Squad Right, 2. MARCH-1-2-3-4-5-OFF;
and similarly for squad right about and off, and
correspondingly for the left foot.

2. While marching:

Same as in 1, inserting "STEP" between "MARCH" and "1," the preparatory command being given as the right (left) foot strikes the ground and the command of execution when the same foot next strikes the ground.

The old saying that "the proof of the pudding is in the eating" was amply proven when on the first day of outside drill in the spring the company moved like a well-oiled machine.

Ⓘ

Extracts from a Report of an Inspection at Ft. Wm. McKinley, P. I.

THERE is in use at this post a dummy pistol made of wood and designed primarily to take the place of the automatic pistol at formations where the holster is worn without the real pistol in it. This dummy has real value as a "tree" for the holster when not in use, for helping to prevent cracking and wrinkling of the leather, thereby lengthening its life.

In Company I, 45th Infantry, Capt. Mateo M. Capinpin commanding, the wooden handles of knives used in the kitchen have been made detachable by the use of brass screws and wing nuts taken from old ammunition boxes. This arrangement permits thorough cleaning and the removal of bits of meat, bread, etc., which get under the handle or so close to the handle that they would not be removable in the case of knives having handles riveted on, and is a measure conducive to cleanliness and the health of the personnel served by the mess.

With the object of reducing consumption of leather in repair of halters, Mr. Kegel has devised a neck rope for use on mules tied in stables, and this has been tried with the animals of Headquarters Company, 57th Infantry, Capt. Roy N. Hagerty, 57th Infantry, commanding, with very considerable saving in halters. The tie rope is made by splicing into the op-

posite ends of a suitable length of rope a ring and a snap. The rope is placed around the animal's neck, the snap hooked into the ring, and the usual halter rope, which is tied to the manger, snapped to the neck rope ring. The leather halter is also used, but the neck rope is made of such length that, with a proper adjustment of the leather halter, the first strain, when the animal pulls upward with his head and neck, comes on the neck rope.

Ⓘ

Use of Rubber Pads for Horses on Long Marches

AN interesting experiment in the use of rubber pads for horses on long marches took place recently at Fort Benjamin Harrison. Maj. M. G. Randol, Field Artillery, directed the experiment. Company M, 11th Infantry, Headquarters Company, 10th Brigade (Infantry), and the Veterinary Department at Fort Benjamin Harrison took part in the experiment.

For a march of one hundred and sixty-six miles from Fort Benjamin Harrison, Indiana, to Camp Knox, the animals, under Major Randol's direction, were shod with rubber hoof pads obtained from the Dryden Hoof Pad Company, Chicago, Illinois. They cost about ninety-four cents per set of four.

In shoeing the horses before the march, it was necessary in some instances to trim the frog so that the rubber heel would fit properly. The Post Veterinarian gave his direct supervision to this. Before the shoes were applied, a thin layer of shredded oakum dampened with tar was placed over the sole of the rubber pad. The purpose of this was to help keep the feet healthy, as it was expected that the rubber pad would have a tendency to draw the feet and, if used for a long time, to contract the heels. This part of the experiment turned out badly, for the oakum and tar became a matrix for gravel and dirt, which balled up, brought pressure against the sole, and caused several horses to limp. Removal of the oakum made the horses sound again.

The march was made under severe weather conditions over paved and unpaved roads of almost every kind. There were hard rains during seven of the nine days and in five of the overnight camps the picket lines were fetlock deep in mud. The gravel roads cut the rubber heels somewhat, but in only one or two instances was it necessary to replace them. The pads worked so well on the hard roads that it was possible to move at a slow trot during some part of every hour.

On arrival at Camp Knox all shoes were removed and the animals were re-shod with plain shoes in front and left unshod in rear. The shoes and pads that were taken off were marked and kept for use on the return trip.

When the time came to prepare for this trip, however, it was found that the feet of most of the animals had changed so in shape during the summer that the former shoes and pads would not fit. By interchanging and by buying about thirty new pairs, all animals were finally shod. Even with the old shoes the return trip home was also successful. Not a single animal fell,

though there was some difficulty in keeping the shoes on the animals since the nail grooves in the old shoes were worn.

At the end of the test all of the officers concerned agreed on the following conclusions:

1. Animals equipped with rubber pads suffer no injury from moving over hard surfaced roads at a slow trot.
2. Riders and drivers relax in the saddle when they feel confident that their mounts will keep their feet, and this makes a march less tiring to both men and horses.
3. Tar and oakum should not be placed beneath the soles of rubber pads, and nails should be driven as high as is safe when shoeing with rubber pads.
4. New shoes and pads should replace old ones that have been removed and left off for any material length of time.

After the return to Fort Benjamin Harrison another type of shoe was found that might prove even more satisfactory than the rubber pad. It has a heavy layer of rubber vulcanized into a channel of the shoe proper, with heavier rubber at the heels and the center of the shoe open. This shoe will not hold gravel. Two companies make this type of shoe: The Fruin Drop Forge Company of Chicago makes the "Chicago Open Shoe" with the channel filled with vulcanized rubber, and the Phoenix Horse Shoe Company of Chicago makes the "Powers Open Shoe" in which fabric is used in place of rubber.

Ⓘ

Cleaning and Renovating Soldiers' Bedding

THE Atlantic Branch, U. S. Disciplinary Barracks, has put into effect a very good method of cleaning and renovating soldiers' bedding and clothing at Governors Island.

The process consists of two parts—cleaning and sterilizing.

The cleaning is done by the usual methods.

The sterilizing is done in a sterilizing and disinfecting oven heated by a high pressure steam boiler. This process destroys all insects and animal life in mattresses, blankets, pillows, clothing, rugs, carpets, and anything that will go into the oven. The Government obtained the apparatus sometime before 1927 from the Kny-Scheerer Corporation of America, New York. The oven is thirty-six inches wide, fifty-four inches high, and eighty-four inches long, all inside dimensions. The door is thirty-six inches wide and fifty-four inches high. The boiler and the oven are a single unit, mounted on a chassis with low broad wheels, so that it may be moved about and operated in the field or in a building.

When mattresses are to be renovated the seams on both sides are opened and the filling is removed, care being taken to disturb the wadding as little as possible. The ticking is sent to the laundry. The filler, maintained in its original shape, is slid into the oven and sterilized. When the mattress is reassembled, the filler is placed in the ticking and any unevenness is smoothed out by the addition of more material or by adjustment of the original wadding. The mattress is then re-sewn and tufted.

This process removes dirt and vermin and turns out clean, wholesome, and comfortable mattresses, bedding, and clothing.

From Lieut. Col. E. M. Wilson, 8th Infantry, comes word that Sgt. Herman Kopps, Company H, has built a device for burnishing chains and bits. It gives excellent results and keeps chains and bits bright with a minimum of hand labor.

The device was built from old bits of material at practically no cost. The materials were an old keg, an old Ford truck tire, a piece of scrap iron, a few bolts, a pair of hinges and a door clasp.

The chains and bits are put into the keg through an opening in the side, along with a few handfuls of tissue or newspaper. The opening is closed and secured, and the scrap iron handle of the keg is attached to the rear of a cart, and the keg rolls around on its rubber tires for an hour. This rolling is done along with the usual work of the cart. When the keg gets back to the stable, the chains are shined.

The keg could also be mounted so as to be turned by a crank with hand or motor power.

Regular Infantry

THE 3d Infantry Brigade recently held a series of competitions with the object of promoting proficiency in ceremonies, a high standard of personal appearance and of care of animals, transportation, and equipment. The two regiments that took part were the 9th Infantry, Col. G. McD. Weeks, and the 23d Infantry, Col. C. L. Mitchell. Before the brigade competition each regiment held elimination trials to select a battalion to represent the regiment. The program for the competition consisted of battalion inspection, battalion review, escort of the color, and an event to determine the model group of company non-commissioned officers. The following statement of one of the judges shows the good effect of the competition and the interest of the participants:

It is extremely difficult to judge such a competition, where clearly every man and officer has put his heart into preparing for the event. The beautiful showing of both battalions is something far ahead of past performances of the division.

Brig. Gen. P. A. Wolf recently assumed command of the 5th Brigade and Vancouver Barracks, Washington. On a hunting trip this fall he and his party obtained the bag limit, including a magnificent bull moose, on a number of hunts in the vicinity of Fort George Wright and Fort Missoula. This condition should go far to make up for the absence of the white lights of a big city.

The 1st Infantry made much of its football game against the Regis College team at Denver, Colorado, which the soldiers won, 18 to 12. Led by the regimental commander, Col. H. A. Hanigan, more than six hundred supporters of the team made the trip from Fort D. A. Russell to Denver by special train. Between the halves Colonel Hanigan, his staff, and the officers of

the 1st Infantry led the band and the regiment in a parade around the stadium. The authorities in Denver were more than generous with their praise.

¶

The 1st Battalion, 2d Infantry, stationed at Fort Wayne, Michigan, spent a part of the time during November in antiaircraft firing. This was a new experience to most of the men. Over a ground course on the thousand-inch range they learned the fundamentals of this firing, and a group of twenty-seven men selected from each rifle company received further training. The climax of the course was firing at a towed target. Shooting over the lake, the men fired at ranges that varied from three to five hundred yards. Their firing improved to such an extent as to prove conclusively that properly trained riflemen can hit low-flying aircraft.

¶

In the 3d Infantry, Col. W. C. Sweeny commanding, Company G has received the Fennesey Memorial Trophy, which goes annually to the rifle company that makes the highest average score in the target season. The officers and competitors in the National and International Rifle Matches at Camp Perry in 1913 presented the trophy to the regiment in memory of Corp. Mike Fennesey, who was killed in line of duty while scoring at Camp Perry.

¶

Six new candidates have reported at the West Point Preparatory School at Fort Snelling. They are from posts in the VII Corps Area. This brings the total attendance to sixteen.

¶

The 4th Infantry, Col. J. K. Partello commanding, has given another demonstration of how Army units can be useful to the communities near which they are stationed. Capt. L. S. Spooner, 4th Infantry, one of the best pistol shots of the Army, had the idea of giving the employees of the banks of Spokane a thorough course in pistol marksmanship. The response was quick. The employees of the Old National Bank, who took the first course, showed a great improvement in marksmanship. As soon as practicable the employees of other banks will be run through the course.

A Few of the Old National Bank Employees of Spokane, Washington, Who Took the 4th Infantry Pistol Marksmanship Course.

¶

The 2d Battalion and Band, 13th Infantry, under command of Lieut.

Col. John Scott, took part in the Armistice Day parade at Providence, Rhode Island. This in itself is not unusual. The special point about the event was the appearance of the battalion, in their especially measured serge uniforms, matched tan leather, yellow gloves, and especially blancoed web equipment. The military smartness and precision of the Army's representatives brought forth much applause and elicited many complimentary remarks.

①

The 15th Infantry, Col. J. D. Taylor commanding, is so far away that it takes a long time to get news of that regiment into the JOURNAL.

Under date of October 5 the regimental commander summed up the activities of the command from April to September. First came battalion training, which included wire entanglement drill and command post exercises in the American defense sector of Tientsin. Then came garrison training, musketry, antiaircraft firing, and tactical exercises. After that came the summer camp at Chinwangtao and target practice. The early part of July was spent at company maneuvers, followed by battalion and regimental exercises and tactical tests. Finally, instruction and qualification with the bayonet were the major activities during the latter part of September. During all of this time the regiment held retreat parades on a public field in Tientsin twice a week. During the entire period there were also other ceremonies and competitions, and athletics and recreation enough to keep everyone busy and interested.

①

The 17th Infantry, Col. C. A. Trott commanding, has won some more friends for the Army. The town of Shenandoah, Iowa, planned to celebrate Armistice Day. It was suggested that Regular troops participate. This brought out the unexpected objection that the soldiers might become unruly and uncontrollable, and so ruin the day. However, the local American Legion Chapter thought otherwise, and the band and a battalion of the 17th Infantry arrived on the scene. The following editorial from the *Evening Sentinel*, Shenandoah, Iowa, November 14, 1929, tells the rest:

WELL BEHAVED SOLDIERS

Some people feared that the soldiers from Fort Crook while on their visit to Shenandoah for two nights and a day would show indications of dissipation or misconduct while relaxed from their accustomed routine at Fort Crook. However, they were happily disappointed, for the soldiers were remarkably orderly and well behaved. The modern soldier has to comply with the rules of health and good conduct. Those who were here, privates as well as officers, lived right up to the standards of good citizenship. Standards in the army have risen with the passing years, and there is no doubt but that the training they receive is good for them, irrespective of the needs that might arise for them to fight for their country.

We believe that Shenandoah people have a better opinion of the soldiers of the Regular Army life than they had before.

All the young men need to learn discipline, to obey orders, and the Army is the best place there is to learn these lessons.

①

According to tradition the ancient Toltecs and Aztecs migrated into Mexico. Thousands of years later the horses of mail-clad *conquistadores* and the sandalled feet of Franciscan friars

Officers and Enlisted Men of the 25th Infantry at Old Fort Mason, Arizona.

widened the trail. In November of 1929 the 2d Battalion, 25th Infantry, moved over the same historic route on its regular monthly practice march. The battalion left the highway and camped on the site of old Fort Mason, which stood for fourteen months as a bulwark between the settlers of the Santa Cruz valley and the hostile Apaches. There Capt. R. F. Lynd, commanding the Battalion, told the command of the ancient traditions of this part of Arizona, the early explorations, the founding of the missions, the settlement by the Spaniards, of the acquisition of the country by the United States, of the frontier posts and the traffic to California, and of the abandonment of these posts at the beginning of the Civil War.

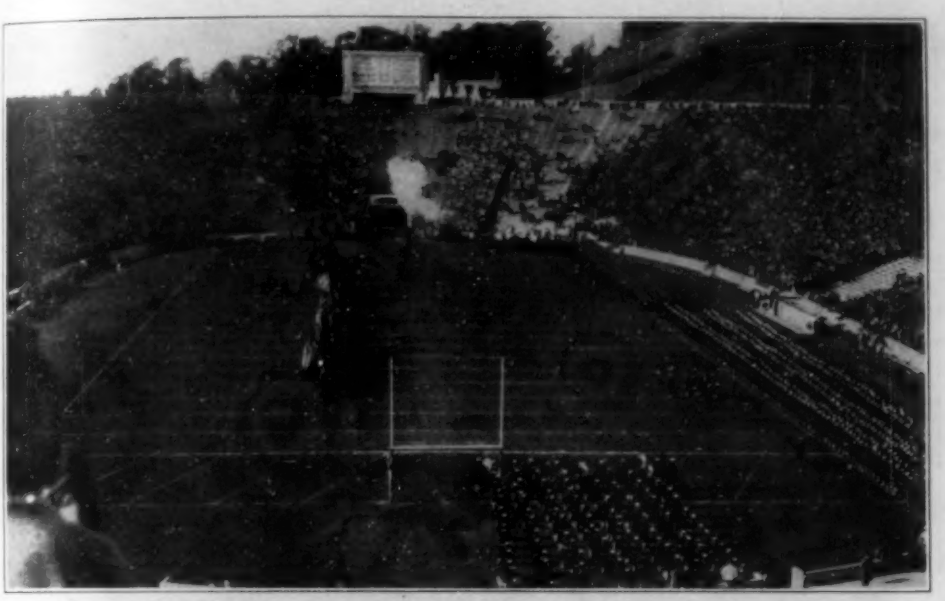
Col. Harris Pendleton, Jr., commanding the 29th Infantry, believes that his regiment has established a new record for automatic rifle fire. Company A, Capt. G. S. Wear commanding, qualified one hundred per cent of his company with the automatic rifle during the 1929 target season. The record reads:

Number of men unqualified who completed course	0
Number of men who completed the course	36
Number of men unqualified who failed to complete the course	0
Number of men required to fire	36
Aggregate score	14,513
Percentage qualified, based on the number who completed	100
Average score per man	403.1

Four-fifths of the men who made the above record had never fired for record before and most of them were recruits. The qualifications of the company now stand at nine experts, twenty-three sharpshooters, and four marksmen.

Company B, Capt. N. D. Woodward commanding, also qualified one hundred per cent with the automatic rifle, with an average score of 392.7.

Seventy thousand people saw the Army sink the Navy by a score of 6 to 0 in the University of California stadium at Berkeley on Armistice Day. On that same day the 30th Infantry, Col. F. R. Brown commanding, paraded in Oakland and again at the football



The 30th Infantry and Sailors from the U. S. S. Idaho at Parade Rest, Observing Silence in Honor of the War Dead at the University of California Stadium on Armistice Day, 1929. Massed Colors of the Allies Are in the Foreground and Antiaircraft Artillery Are Firing a Salute.

game. The IX Corps Area commander, Brig. Gen. J. C. Castner, was much pleased at the showing of the regiment in these two public appearances, and had the following to say in a letter to the regimental commander:

The appearance of the 30th Infantry on this occasion was the subject of most favorable comment by many of the audience present and by the naval officers who were present with me in the reviewing stand.

In my opinion the work done by the 30th Infantry on this occasion placed the Army in the most favorable light to all the civilians who saw this organization and to the members of other organizations, such as the United States Navy, the United States Marine Corps, the National Guard and Reserve components.

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Again the JOURNAL is glad to announce a list of squads that the Chief of Infantry has designated as members of his Combat Team for their organizations:

Corp. J. P. Storley's squad of Company G, 3d Infantry.

Corp. W. A. Farrow's squad of Company A, 4th Infantry (Fort Missoula).

Corp. M. L. Moore's squad of Company E, 4th Infantry (Fort George Wright).

Corp. Edward Harper's squad of Company I, 4th Infantry (Fort Lincoln).

Corp. T. W. Chambers' squad of Company B, 5th Infantry.

Corp. J. E. Kiertz' squad of Company C, 6th Infantry.

Corp. J. J. Pitman's squad of Company L, 7th Infantry (Vancouver Barracks).

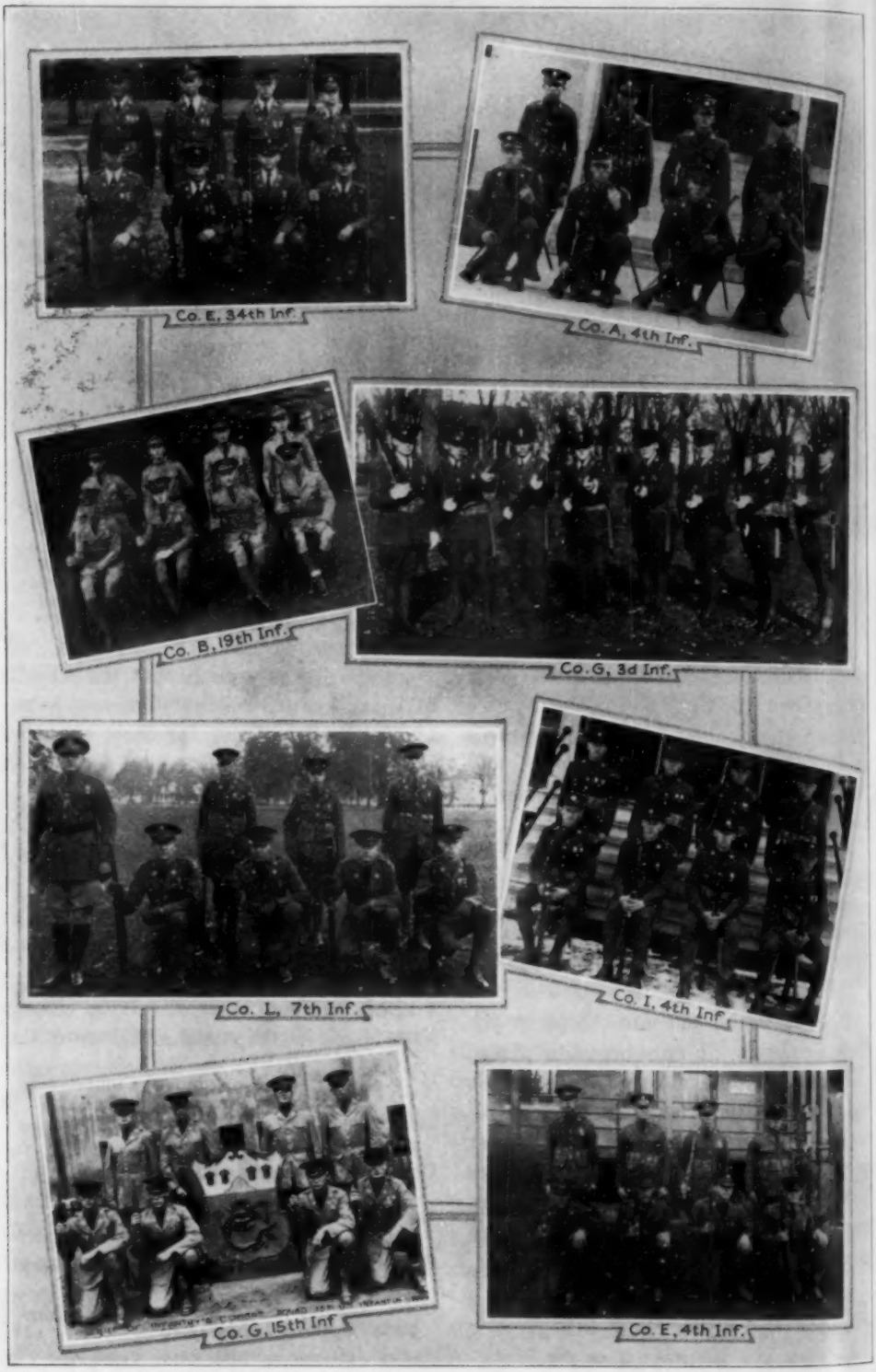
Corp. H. S. Goedert's squad of Company C, 12th Infantry (Fort Howard).

Corp. W. H. May's squad of Company C, 15th Infantry.

Corp. Hoyle Helm's squad of Company B, 19th Infantry.

Corp. Nick Schunloff's squad of Company C, 21st Infantry.

Corp. Lindley Simmons' squad of Company E, 38th Infantry.



Some Recent Squads of the Chief of Infantry's Combat Team.

Reserves

A Reserve Officer on Duty with a Regular Unit

THE following letter from a lieutenant colonel of the Reserve Corps to a major of the same Corps gives an intimate picture that more formal accounts cannot possibly give. With the permission of the addressee, Maj. Paul P. Howe, of Beaver, Pennsylvania, we reproduce so much of the letter as is not entirely personal.

I have recently returned from an arduous and interesting tour of duty. From the 28th of August until the 16th of September I was executive officer of the 13th Infantry (Regular). During this time, we participated in the First Corps Area maneuvers.

All available Regular troops in this corps area took part: infantry, artillery—including coast—cavalry, tanks, etc. The troops were divided into two divisions. The third, consisting of Reserve officers, took part in automobiles and for them it was C.P.X. affair. I was the only Reserve officer of field rank to be assigned to Regular units.

We started in at the southern end of the state of Vermont and finally wound up at Fort Ethan Allen. At first we had the mobilization phase, then a march, a meeting engagement, the taking of an active defense, an attack against a defensive position, the break through, and finally the pursuit. The problem—a corps one—was wonderfully worked out.

At the start the weather was torrid. Then we ran into two days of drenching rain; even my trench coat leaked through, and my two uniforms and my three suits of underwear were sopping wet at the same time. The final phases were finished in cool but excellent hiking weather. The first day we hiked twenty-two and one-half miles. A few days later we did twenty-seven and one-half. Certain Class One supplies were lacking. There were no facilities for cleaning one's self, and such like. It was decidedly tough campaigning. Several nights I got less than two hours' sleep. But it simulated war conditions to perfection. After a day of fighting in a torrential downpour we made camp. Orders came to advance to the jump-off line at 2:30 a. m. Major Kroner, the commander of the 13th, and I rode out of camp—on horses—at the head of the regiment. Everything, of course, was pitch black. The rain came down in sheets. Every now and then there would be a vivid flash of lightning followed by a terrible clap of thunder. It was the most realistic thing imaginable. It brought back memories of the days when Andy and I used to ride up towards the front at the head of the old second battalion.

To my mind, this—with the Regular Army unit—is the best possible training for the Reserve officer—especially those of the lower grades. For during maneuvers he lives under canvas and lives in the field. These maneuvers offer the best training along these lines. Of course, I am not losing sight of the correspondence courses. They are of great value. I believe a combination of correspondence courses and these maneuvers make for the best possible system of training. After all, the basis of all training for the Reserve officer should be to fit him for field duty. This training is the best way to get it. I have so recommended in my report. I

will admit that it was strenuous but so is duty in the field. As we both know from experience.

My experience with the Regular officers of the 13th was most instructive and pleasing. Many of them I had known for years. The regimental commander I met at Camp Devens last spring. My assignment was a most happy one.

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Pershing Rifles

Pershing Rifles is an honorary society of basic R. O. T. C. students, which has for its aims the promotion of national defense in general and stimulation of interest in R. O. T. C. work in particular. This they propose to do by setting other basic students an example in soldierly appearance and conduct.

Company D, Pershing Rifles, sixty strong, from the State University of Iowa, represented the University at the funeral of the late Secretary of War, James W. Good, at Cedar Rapids, Iowa, on Friday, November 22.

For its participation in this event, Company "D" received a commendation from the Chief of Staff of the Army, which said in part: "The weather was extremely cold and these young men had no overcoats, but they showed great hardiness and cheerfulness under the trying circumstances."

The P. M. S. and T. at Iowa is Lieut. Col. C. R. Lewis, Infantry (D. O. L.), and the company of Pershing Rifles is conducted by Capts. B. F. Hood and H. E. Stow, both Infantry (D. O. L.).

Books

WAR BREAKS DOWN DOORS, by Maj. John N. Greely, Field Artillery. Hale, Cushman & Flint. 1929. 278 pages. $2.50.

Major Greely, born and bred in the Army, presents the life and rise of a Polak recruit in an artillery battery. Free of puritanical inhibitions, this book takes the reader into the very life of the barracks. It rings true because the author knows whereof he speaks, a rare thing these days.

"War Breaks Down Doors" is a cross-section of America. Like Hoover and Smith, the hero had ability and the will to rise.

This absorbingly interesting novel is a biographical sketch combined with the love story of two strong characters. The plot is well-knit, the style is unusually pleasant. This reviewer recommends the book highly; it is good.

WAR BUGS, by Charles MacArthur. Doubleday, Doran & Co. New York, 1929. $2.00.

"War Bugs" is a human document of much vitality. It gives the point of view of a private of an artillery battery, made up of University of Illinois men, in the Rainbow Division. Unlike "All Quiet on the Western Front," it is not essentially a psychoanalysis of a man who found war hard, discipline harder, and "non-coms" harder still. The humor is rough and words are not minced, but "War Bugs" is not so Rabelaisian as Remarque's book or "The Specialist."

MacArthur makes you laugh and cry. He has no illusions about his officers and razzes them freely and frankly. As a college man of some service, he and his mates resented the less educated officer fresh from a training camp.

This reviewer's opinion is that "War Bugs," although making no claims as to literary style, deserves a far wider reading than "All Quiet on the Western Front," but is not likely to get it. There is a reason for this, namely, that the average stay-at-home dreads war and is interested in learning how a veteran reacted to it. When the "hero" frankly acknowledges his terror, the gentle reader glows with pleasure and says proudly to himself, "Why, he's just like me!" and then praises the book to his friends.

A soldier will like "War Bugs." A wielder of the pen, as distinguished from the wielder of the sword, might not.

THE TRUTH ABOUT GERONIMO: Life with the Apache Scouts, by Britton Davis. Yale University Press. October, 1929. 253 pages. $4.00.

In this interesting story of his five years of living among the Apaches and commanding an Apache scout company, Britton Davis explodes many of our pet beliefs. For instance, he clearly proves that the Apache was not

teacherous. An individual here or there, like Geronimo, was untrustworthy, but if the Apaches were hostile there was no sham about it.

The author punctures some inflated reputations and with scarcely concealed bitterness makes an appeal for proper recognition of such great characters as Emmit Crawford and C. B. Gatewood "and those others of the Army of the West who carried on with no thought of reward for performance of duty."

The book ruthlessly exposes the double dealing of the authorities in Washington and bitterly denounces the failure to recognize the work of Crawford and Gatewood. It is a valuable contribution to American history which has the appeal of fiction.

①

MEDALS OF HONOR, by James Hopper. The John Day Co., Inc., New York, 1929. 281 pages. $3.00.

Mr. Hopper, war correspondent for *Collier's* in France, selected nine cases of Medal of Honor awards and interviewed the men who received them. This book is the result. In his interviews Mr. Hopper sought the reasons why the soldier enlisted, what impelled him to perform deeds beyond the call of duty. Each story is a brief character sketch. Mr. Hopper takes the reader behind the scenes, reproduces the exploit with a wealth of detail, atmosphere, and color.

In his foreword Mr. Hopper gives the erroneous impression that, until the World War, the Congressional Medal of Honor created in 1862 was awarded to enlisted men only. He ignores the act of 1863 which added officers to those eligible for the award.

Medals of Honor is well written and intensely interesting. It is a distinct contribution to the record of American valor.

①

OUR SECRET WAR, by Thomas M. Johnson. The Bobbs-Merrill Company, Indianapolis, Indiana. 340 pages. Price $2.50.

This is a story of some of the true, and more of the fancied, activities of the American military intelligence secret service operatives during the World War. The author was the accredited correspondent of *The New York Sun* with the A. E. F. and tells his tales in an easy, readable, newsy style. He never fails to mention by name and to praise the senior officers of the Intelligence Service. This is overdone even to the point where one is tempted to conjecture why. The collection of incidents is sufficiently grounded upon fact so that the inventive pen of the author and the growing anecdotes of ageing veterans combine themselves into a very entertaining piece of reading which one may class as historical fiction or fictional history, as you like.

①

THE DEFENCE OF BOWLER BRIDGE, by H. E. Graham. William Clowes and Sons, Limited, London. Price 3/6.

Times have changed since Lieut. Backsight Foresight held Duffers Drift against the Boers. They have even changed somewhat since Maj. Single List finally succeeded in winning his objective in the Battle of Booby's Bluffs. And so we have another dreamer with us in the person of Lieut. Augustus Sydney Smith of the 1st Battalion, Wessex Regiment.

Lieutenant Smith differs from his

predecessors, however, in that he learns his job in only one dream—and in his second dream he accomplishes his mission. His job is to defend a bridge against a superior enemy armed with light tanks and armored cars. In addition to bringing out the importance of correct positions for the defending force, the author tries to show some of the limitations in respect to ground that are imposed upon a force composed entirely of armored fighting vehicles. As the author points out in his preface, this fact is not universally appreciated, and such a force "is faced with a very difficult problem when confronted with a physical obstacle held by a resolute and suitably equipped enemy."

A very well-written little sketch of what might be a situation in some future war. Just enough in the two dreams of the English lieutenant to make one pause in his present-day work and give a thought or two to the future. Recommended for all in the military service.

THE WET FLANDERS PLAIN, by Henry Williamson. E. P. Dutton & Co., New York, 1929. 122 pages gross. 98 pages net. $2.00.

In reading this book, which is the account of a journey to Flanders, one is charmed by the wizardry of the author. He carries one along as does the orator—appealing to the emotions and almost anaesthetizing the reason. Behind the beauty of the words and style of this former British soldier lies a cynical philosophy which is illustrated by these excerpts:

Those at home, sitting in arm-chairs and talking proudly of Patriotism and Heroism, will never realize the bitter contempt and scorn the soldiers have for these and other abstractions.

Human virtues are superior to those of national idolatry, which do not arise from the Spirit: that the sun is universal, and that men are brothers . . .: that we must free the child from all things which maintain the ideals of a commercial nationalism.

Wars are economic in origin, the mass of each people being colored and controlled by emotional slogans which are hostile to the truly peaceful lover of his country; the matured stupidity called patriotism is but a glossy light of selfishness, most evident among those with commercial power, hating their rivals in commercial power.

Glory, Sacrifice, Heroism, Patriotism—all the abstract ideas which Europe still suffered her children to be taught.

Mr. Williamson's book will appeal to the self-styled intelligentsia who sneer at such plebeian qualities as those which are the enduring cement in the foundation of our form of government—Patriotism, Self-sacrifice, Sense of Duty, Heroism and Contempt for Weakness.

The author's references to those American tourists whom he met on his journey indicate the superficiality of his observations and the faultiness of his reasoning which is more inductive than deductive.

The Wet Flanders Plain is a work of literary art which should be read as such.

BOLIVAR, Liberator of Venezuela, Colombia, Ecuador, Peru and Bolivia, by Henry Rowan Lemly, Major, United States Army (Retired). The Stratford Press, Boston, Mass.

The author set himself the task, so we read in the foreword of this inter-

esting volume, to write a history of the "Washington of South America" that he may be known to the people north of the Río Grande as they know the "Father of Our Country" south of that boundary stream. Although meant to be a biography of the great man whom William Spence Robertson called "the most formidable military and political giant of Hispanic America," the book goes further and is really a history of the struggle of the several South American nations which owe their independence to Simón Bolívar. As might be expected, the book is replete with romance. Even the supernatural, with its strong appeal to the Latin mind, played a part in the stirring events of the days when Spanish-American independence was still in the limbo of unfulfilled hopes. Thus, on March 26, 1812, the anniversary of an uprising which deposed the Spanish Captain General Emparan, a terrible earthquake destroyed a large part of Caracas and several other towns in Venezuela, burying thousands of inhabitants beneath the ruins. Patriot troops perished by the hundreds while the invaders under Monteverde lost not a man. At Caracas the gallows, from which several conspirators against the Spanish Crown had been hanged, was completely demolished while the arms of Spain, upon a column in the neighboring military chapel, was the only piece left standing. No wonder that the population, swayed by the oratory of loyalist priests, responded with fervent shouts of *"Viva España y la Inquisición!"*

The late Maj. Henry Rowan Lemly served as a colonel in the Bolivian army and served as director of the National Military School at Bogotá. His literary contribution is but another of the many services the author has rendered to Hispanic America.

SCHLUMP: The Story of a German Soldier, Told by Himself. Harcourt, Brace & Company. New York, 1929. 299 pages.

This book shows the influence of Boccaccio's Decameron and Baron Munchausen. Schlump was a veritable Don Juan who left a trail of conquests throughout the villages behind the lines. Though he spent but little time in the combat zone, he gives a vivid picture of the discomforts, horror and danger.

In "Schlump," as in "All Quiet on the Western Front," is ample evidence that the German soldier's idea of humor is not unlike that associated with the Ku Klux type of mind. Filth is presented obtrusively rather than with subtlety; it offends rather than amuses.

The best part of the book is that which deals with the demoralization following the failure of the Peace Offensive. The frank discussion of the petty graft practiced by rear-area warriors is illuminating. Those parts alone make the book worth while.

The book rings true, although Schlump may be bragging a bit when he recounts his successes in love; the boy seems to have been a "knockout" with the girls, were they German, French or Belgian.

THE CHURCH AND WAR, a Catholic Study, by Franzeskus Strattman. O. P. Kenedy & Sons, New York. 1928. 219 pages. $2.25.

Father Strattman presents in this book the first complete theological ex-

amination of the attitude of the Church toward war since 1914.

From the standpoint of Catholic teachings, the author divides war into two classes: Just and Unjust. He holds that defensive wars are just wars —"*If*, without just cause, one state overruns another, lays waste the land, murders the inhabitants: in a word, treads right and justice under foot, then the state that is attacked has undoubted right to defend itself with armies."

Catholic moral theology insists that a just cause alone can make a defensive war permissible—as when aggression is unmistakable—but the defensive must not exceed absolutely necessary defense. If justice is on the side of the attacker—in order to rectify some great injustice done by the state attacked—the guilty state must submit to punishment from its adversary. The author admits the almost impossibility of deciding who is the original aggressor. He asks, "Will any nation acknowledge today * * * that it was the unjust attacker? * * * In the late war, each state defended or pretended to defend some sacred ideal."

The author falls into the common error that past wars were fought by artillery and engineers and that future wars will be largely a matter of poison gas!

On the whole, The Church and War contains much meat for thought, both for the thinking patriot and the thinking slacker—if there be a slacker who uses his ability to reason logically.

The Infantry Association

Results of Bi-Annual Election of Officers

The bi-annual election of officers of the Infantry Association took place at the annual meeting of the Executive Council for 1929. The officers elected for the years 1930-31 are:

President

BRIGADIER GENERAL G. S. SIMONDS

Vice-President

COLONEL J. L. DEWITT

Additional Members of the Executive Council

COLONEL L. D. GASSER
LIEUTENANT COLONEL CAMPBELL B. HODGES
LIEUTENANT COLONEL H. S. GRIER
LIEUTENANT COLONEL EDWIN BUTCHER
MAJOR T. B. CATRON
MAJOR J. W. LANG
MAJOR L. S. HOBBS

The Council designated MAJOR T. B. CATRON to be the Secretary and Treasurer.